A LAND USE MANAGEMENT PLAN FOR THE CHIWAUKEE PRAIRIE-CAROL BEACH AREA OF THE TOWN OF PLEASANT PRAIRIE

Wisconsin Coastal Management Program

Progress Report

For WCMP Staff Use
WCMP Project Number: 828.6a
Date Received:

AD-CM 4(5/80)

Submit this Progress Report to: Wisconsin Dept. of Administration
Office of Coastal Management
101 S. Webster Street, 7th Floor
Madison, WI 53702

Project Title: Pleasant Prairie--Carol Beach Environmental Corridor Management Program	Purchase Order Number: ADB-01732	
Project Duration in MONTHS: 6 Months	Report Period From: March 1, 1982 To: July 31, 1982	
Project Type (Check one or more): ☐ Improve SCA Management SCA Number _____ ☐ Implement State Law ☐ CEIP (Coastal Energy Impact Project) ☐ Demonstration	CMP funds spent to date: $8,000	% of budgeted funds: 67%
	Match spent to date: $1,925	% of budgeted funds 64%
	Signature of project manager: Mabel M. Reed	

1. Objectives of Project (as contracted):

1. Ensure the preservation of the unique, natural, scientific, cultural, and educational values of the environmental corridor land in the Town of Pleasant Prairie located east of STH 32 along the Lake Michigan shoreline.

2. Reconcile conflicting urban development objectives and open space preservation objectives within this corridor.

2. Thoroughly discuss progress made toward accomplishing objectives during this reporting period:

During this period the Commission established a technical and citizens advisory committee to direct the Chiwaukee Prairie-Carol Beach land use management planning program. A subcontract with the Town of Pleasant Prairie for local planning and engineering services was also executed during this period. In addition, preliminary drafts of Chapters I, II, and III of the study report were prepared. Specifically, Chapter I sets forth the need for, and purpose of, the Chiwaukee Prairie-Carol Beach land use management planning program. Chapter II provides a detailed description of the physical characteristics of the study area. Maps at a scale of 1' = 400' were prepared showing existing land use patterns, land ownership patterns, prairie areas, surface waters and floodlands, platted lands, soil suitability for residential development, and primary environmental corridors within the study area. Finally, Chapter III presents a description and analysis of the legal land use management framework which may have a bearing on future land use within the study area. This chapter describes the federal section 404 and section 10 regulatory programs of the U.S. Department of the Army Corps of Engineers; various state wetland, shoreland, floodland, navigable waters, and sanitary sewer extension regulatory programs administered by the Wisconsin Department of Natural Resources; and local land use controls administered by Kenosha County and the Town of Pleasant Prairie as they apply to the study area.

3. Problems/Concerns (Issues, project, or administrative concerns):

None

4. Impact thus far, if any, of the project on the shoreline, coastal resources, or coastal residents:

None

Signature of person authorized to receive funds:

Please use additional pa...

COMMUNITY ASSISTANCE
PLANNING REPORT NO. 88

A LAND USE MANAGEMENT PLAN FOR THE CHIWAUKEE PRAIRIE-CAROL BEACH AREA OF THE TOWN OF PLEASANT PRAIRIE

Southeastern Wisconsin Regional Planning Commission

CHIWAUKEE PRAIRIE-CAROL BEACH LAND USE MANAGEMENT PLANNING PROGRAM
TECHNICAL AND CITIZEN ADVISORY COMMITTEE

Lewis R. Dixon.....Senior Land Use Planner, Wisconsin Wisconsin Electric Power Company

Howard J. Ecklund.....Regulatory Functions Branch, St. Paul District, U. S. Department of the Army, Corps of Engineers

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Charles Graf.....Resident, Carol Beach Estates

Florence Jensen.....President, Carol Beach Homeowners Association

LaVerne Kulisek.....League of Women Voters of Kenosha

James. R. Madden.....Resident, Carol Beach Estates

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Dr. Forest Stearns.....Professor, Department of Botany, University of Wisconsin-Milwaukee

Russel Van Herik.....Director, The Nature Conservancy

COMMUNITY ASSISTANCE PLANNING REPORT
NUMBER 88

A LAND USE MANAGEMENT PLAN FOR THE CHIWAUKEE PRAIRIE-CAROL BEACH AREA OF THE TOWN OF PLEASANT PRAIRIE

Prepared by the
Southeastern Wisconsin Regional Planning Commission,
Nelson and Associates, Inc., Land Planning and Development Consultants,
and Crispell-Snyder, Inc., Consulting Engineers

Financial assistance for the preparation of this study has been provided through the Wisconsin Coastal Management Program under the Coastal Zone Management Act of 1972, administered by the Federal Office of Coastal Zone Management, National Oceanic and Atmospheric Administration.

October 1982

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CHAPTER I

INTRODUCTION

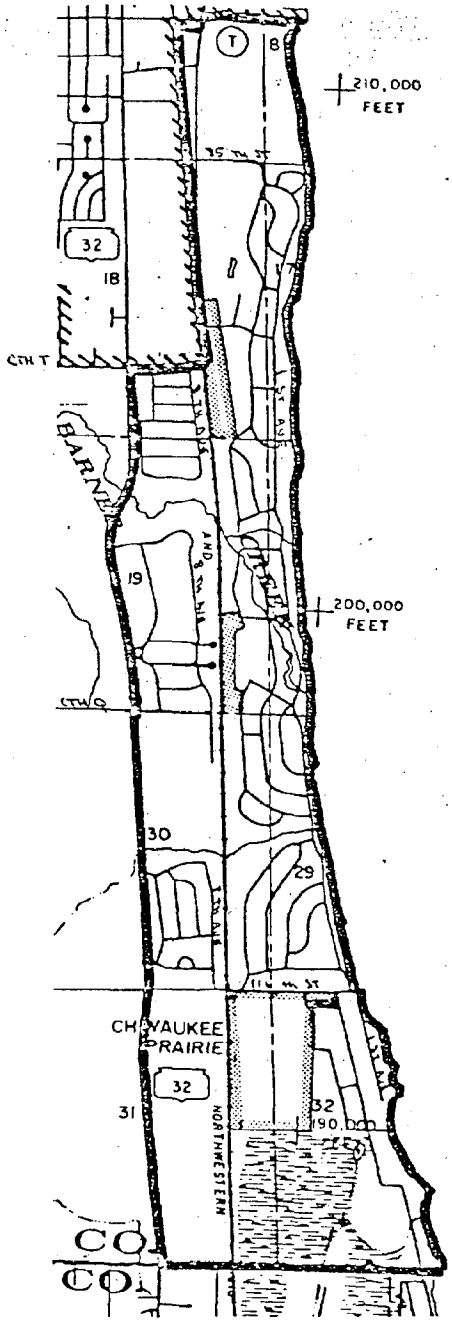
BACKGROUND AND NEED FOR THE PLANNING PROGRAM

The portion of the Town of Pleasant Prairie, Kenosha County, lying along the Lake Michigan shoreline east of State Trunk Highway 32 represents one of the outstanding natural resource areas in southeastern Wisconsin. This area, identified on Map 1, is characterized by a beach dune ridge and swale complex. High quality wetlands and prairies are associated with the ridges and swales. Much of this area has been identified by the Regional Planning Commission as a primary environmental corridor--that is, an area containing concentrations of the best remaining elements of the natural resource base in southeastern Wisconsin. The Wisconsin Scientific Areas Preservation Council has identified a scientific area and a natural area of statewide significance in this area. The identified scientific area is the Chiwaukee Prairie, a National Natural Landmark and recognized as one of the best remaining examples of Lake Michigan shore low prairie in the upper mid-west.

The preservation and protection of the natural resources in this area is complicated by the fact that a large portion of the area has been platted for urban development. An initial plan for the development of the area as a model city to be known as Edithton Beach was developed in the 1920's. This plan was not implemented, however, due to the economic conditions following the stock market crash of 1929. The next intensive effort to develop the area occurred after World War II when substantial portions of the area were formally subdivided for residential development. All of the platting activity assumed that the urban development would rely on on-site sewage disposal systems. As a result of this platting activity, streets were constructed and houses were built in scattered locations within the area. Wet soils and other physical development limitations, however, have significantly restricted urban development within this area. Certain streets, proposed in the original subdivision plats, have not been constructed; certain other streets which were constructed are not used and have fallen into disrepair; and residential development in many portions of the area is scattered and sparse. While some

MAP 1

CHIWAUKEE PRAIRIE-CAROL BEACH STUDY AREA



concentrations of existing urban development in this area should be provided with public sanitary sewers and other urban services, other portions of the area may not be developable even with centralized sanitary sewer service. Despite past construction activities, wetland and prairie features have persisted in many areas because of the soils and other physical development limitations, and the natural resource values of much of this area remain intact.

The future of the Chiwaukee Prairie-Carol Beach area has, for some time, been uncertain because of the divergent natural resource preservation and urban development objectives which exist relative to the area, and because of the relatively large number of public agencies and private interests which are concerned with, or which may have a bearing on, future land use within the area. This uncertainty was recognized in the Kenosha County farmland preservation plan which designated this portion of the Town of Pleasant Pairie as a special area requiring an in-depth study for the purpose of formulating a plan to guide future land use. Recognizing both the important natural resource values of the area, as well as the inroads of urban development in the area, the Town of Pleasant Prairie and the Kenosha County Office of Planning and Zoning Administration in 1981 proposed a planning program which would bring together the concerned public agencies and private interests in an effort to reconcile conflicting urban development and open space preservation objectives.

Acting in response to this proposal, the Commission submitted an application to the Wisconsin Coastal Management Council--the administering agency of the federal coastal management program in Wisconsin--for funding in the amount of $12,000 in support of such a planning program. In applying for the grant, the Commission agreed to provide an in-kind contribution equal to 20 percent of the estimated cost of the study. Both the Town of Pleasant Prairie and Kenosha County expressed support for the proposed study in letters to the Commission. Upon notification of grant approval, the Regional Planning Commission, in turn, entered into a subcontract with the Town of Pleasant Prairie under which the town engineer and town planner assisted the Regional Planning Commission in the conduct of certain portions of the study. Under the subcontract, the Town received $4,800 of the available federal coastal

management monies to support the work of the town planner and town engineer on the study, with the Town agreeing to provide matching monies in the amount of $1,200.

The planning program was conducted by the Regional Planning Commission with, as already noted, the assistance of the Pleasant Prairie town planner and the town engineer under the guidance of an advisory committee consisting of representatives of the Town of Pleasant Prairie, Kenosha County, the Wisconsin Department of Natural Resources, the U. S. Army Corps of Engineers, major affected landowners including the Wisconsin Electric Power Company and The Nature Conservancy, and citizen members. The full membership composition of this Advisory Committee is listed on the inside front cover of this report. The Advisory Committee meetings held during the course of the study provided the primary basis for the expression of public agency and private interest positions regarding the management of land use within the Carol Beach area and, ultimately, for the development of a land use management plan for the area.

PURPOSE OF THE PLANNING PROGRAM

The primary purpose of the Chiwaukee Prairie-Carol Beach area planning program was to develop a detailed land use management plan which reconciles valid but conflicting open space preservation and urban development objectives within the area through the active involvement of all major concerned public and private interests. The land use management plan prepared under this program identifies the areas within the study area which should be preserved and protected to maintain its important environmental qualities; identifies which of those areas should be preserved and protected through public land use regulation and which should be preserved and protected through public or private acquisition; and identifies those concentrations of existing urban development and related areas of potential urban development which should be served by public sanitary sewers and other urban services in a manner which is sensitive to the unique natural resource features of the area.

The plan is intended to guide the concerned local units and agencies of government in the provision of basic urban services and facilities--including,

most importantly, public sanitary sewer service; to guide local, county, state, and federal units and agencies of government in the exercise of their respective land use and other related regulatory responsibilities; to guide public agencies and private interests in the acquisition of additional environmentally significant open space lands; and to provide a framework within which private interests can formulate plans for additional development within the Carol Beach area.

It should be noted that the sanitary sewer service area recommendations of the land use management plan as set forth in this report are intended to constitute an amendment to the sewer service area recommendations contained in the regional water quality management plan. The recommendations of the regional plan are necessarily general and do not reflect detailed local planning considerations. The sanitary sewer service area recommendations of the Carol Beach management plan will, upon formal adoption by the concerned local and county governments and by the Regional Planning Commission itself, be used by the Regional Planning Commission in its review of locally proposed sanitary sewer service extensions, as provided for under Section NR 110.08(4) of the Wisconsin Administrative Code, and by the Wisconsin Department of Natural Resources in its review and approval of such proposed sanitary sewer extensions.

SCHEME OF PRESENTATION

Following this introductory chapter, Chapter II of the report sets forth a descriptive analysis of the Carol Beach area, including inventory findings with respect to such important matters as wetlands, prairies, and platting activity. Chapter III describes the legal framework applicable to land use decision making in the Carol Beach area, including federal and state wetland regulatory programs and county shoreland zoning requirements. Chapter IV describes the recommended land use management plan.

CHAPTER II

STUDY AREA DESCRIPTION

INTRODUCTION

The preparation of a land use management plan for any area requires consideration of the existing land use pattern and of the natural resource base of the area, of the existing and anticipated future population levels and of the attendant demand for additional residential and other urban land; and of the physical suitability of the area to sustain additional urban development. Accordingly, this chapter presents a description of the Chiwaukee Prairie-Carol Beach study area including information on population levels, land use and land ownership patterns, the natural resource base, the suitability of soils for urban development, and existing sewage disposal facilities and problems.

GENERAL DESCRIPTION OF THE STUDY AREA

The Chiwaukee Prairie-Carol Beach study area is located in the eastern portion of the Town of Pleasant Prairie, Kenosha County, and is bounded by Lake Michigan on the east; by the Wisconsin-Illinois state line on the south; by STH 32 and the Chicago & North Western railway right-of-way on the west; and by 80th Street on the north. The study area encompasses 1,825 acres, or about 8 percent of the total area of the Town of Pleasant Prairie.

Vehicular access to the area is provided via STH 32, CTH T, CTH Q, and 116th Street. The study area is traversed in a north-south direction by the right-of-way of the Chicago & North Western railway, which provides commuter-oriented passenger service between the Cities of Kenosha and Chicago, as well as railway freight service over this route.

There is no public or private centralized sanitary sewerage service provided within the study area. The only public centralized water supply service is provided in the residential area located in the study area north of 90th Street. Service here is provided by the Pleasant Prairie water utility which

obtains water on a wholesale basis from the Kenosha water utility. The only centralized private water supply service in the study area is provided by a small system which serves a residential subdivision located in the study area east of Sheridan Road and north of 116th Street.

POPULATION

Existing Population

According to the federal census, the resident population of the Chiwaukee Prairie-Carol Beach study area stood at 1,375 persons in 1980. This represents an increase of 259 persons, or 23 percent, from the 1970 study area population of 1,116.

In the formulation of a land use management plan for the study area, it must be recognized that the area is not only a part of the Kenosha metropolitan area, but is located between the Chicago and the Racine and Milwaukee metropolitan areas, thus complicating the urban development pressures on the area. Population trends for the City of Kenosha and the Towns of Pleasant Prairie and Somers--which, together comprise the Kenosha planning district, consisting of all that area of Kenosha County east of Interstate Highway 94--are presented in Table 1. As indicated in this table, the population of the Kenosha planning district increased from 66,105 persons in 1950 to 98,094 persons in 1970, an increase of about 32,000 persons, or almost 50 percent, during that 20-year period. In contrast, there was virtually no change in the population of the planning district between 1970 and 1980. The population of the City of Kenosha decreased slightly, while the populations of the Towns of Pleasant Prairie and Somers increased slightly during the last decade. In this respect, it should be noted that the population of the Kenosha Planning District actually decreased slightly from 1930 to 1940, a time of severe economic depression.

Future Population

The projection of probable future population levels for any geographic area is a difficult task, accompanied by uncertainties and subject to periodic revision as new information becomes available. The traditional practice typically followed in determining a future population level to utilize in physical

TABLE 1

POPULATION OF THE KENOSHA PLANNING DISTRICT: SELECTED YEARS 1850-1980

Year	Population			
	City of Kenosha	Town of Pleasant Prairie	Town of Somers	Total
1850	3,818	959	680	5,457
1860	3,990	1,400	1,277	6,667
1870	4,309	1,377	1,359	7,045
1880	5,039	1,386	1,458	7,883
1890	6,532	1,646	1,632	9,810
1900	11,606	1,776	2,044	15,426
1910	21,371	3,217	1,788	26,376
1920[a]	40,472	2,030	2,084	44,586
1930[a]	50,262	3,457	3,046	56,765
1940[a]	48,765	3,892	3,641	56,298
1950	54,368	6,207	5,530	66,105
1960[a]	67,899	10,287	7,139	85,325
1970	78,805	12,019	7,270	98,094
1980	77,685	12,703	7,724	98,112

[a]Subsequent to this year, parts of the Towns of Pleasant Prairie and Somers were annexed to the City of Kenosha.

Source: U. S. Bureau of the Census and SEWRPC.

development planning has been to prepare a single population forecast believed to be most representative of future conditions. This traditional approach works well in periods of social and economic stability, when historic trends can be anticipated to continue relatively unchanged over the plan design period. During periods of major change in social and economic conditions, however, when there is great uncertainty as to whether historic trends will continue, alternatives to this traditional approach may be required. One such alternative approach proposed in recent years, and utilized to a limited extent at the national level for public and quasi-public planning purposes, is termed "alternative futures." Under this approach, the development, test, and evaluation of alternative plans is based not upon a single, most probable forecast of future conditions, but upon a number of futures chosen to represent a range of future conditions which may be expected to occur over the plan design period.

Recognizing the increasing uncertainty inherent in estimating future population levels, the Regional Planning Commission began incorporating the alternative futures approach into its planning program in the mid-1970's, the first known attempt to apply this approach to regional planning in the United States. In the exploration of alternative futures for the Southeastern Wisconsin Region, an attempt was made first to identify all those external factors that may be expected to directly or indirectly affect future development in the Region, together with the likely future range of prospects for these factors. Two alternative scenarios for regional growth and change, involving different assumptions regarding three major external factors--the cost and availability of energy, population lifestyles, and economic conditions--were thus defined. These scenarios represent opposite extremes of the future prospects identified for the external factors and, consequently, indicate relatively large potential differences in future population growth and in economic activity. The more optimistic scenario developed postulates moderate population and economic growth; the less optimistic scenario postulates a stable economy and a declining regional population. Two alternative regional land use plans, a centralized plan and a decentralized plan, were then developed for each of the two alternative future scenarios of external factors, thus providing in effect four alternative futures as a framework for physical

development and planning in the Region.[1] Year 2000 population projections for the Kenosha planning district-- assuming centralized and decentralized population distributions under moderate growth and stable/declining growth scenarios--are presented in Table 2.[2]

The anticipated population levels under the moderate growth-centralized population distribution scenario are the basis for the Commission-adopted design year 2000 regional land use plan. Since the regional land use plan population levels are based upon the moderate growth-centralized population distribution scenario, the year 2000 population level for the Kenosha planning district anticipated under the regional land use plan--143,200 persons--is significantly higher than the population levels which would be anticipated under a stable/declining growth scenario assuming either a centralized population distribution--104,400 persons--or a decentralized population distribution--96,800 persons. The adopted regional land use plan population level for the Kenosha planning district is, however, significantly lower than the population of 162,800 persons which would be anticipated under the moderate growth scenario, assuming a decentralized population distribution.

The regional land use plan anticipates a 1980 population of 114,400 persons for the Kenosha planning district, an increase 16,306 persons, or 17 percent, over the 1970 level. As noted above, however, there was virtually no change in the resident population of the planning district between 1970 and 1980. The number of households in the planning district, however, increased by 5,083, or 17 percent--from 29,663 households in 1970 to 34,746 households in 1980. The actual number of households closely approximates the figure of 35,300 anticipated in the regional land use plan. Thus, the number of households in the planning district increased almost as anticipated between 1970 and 1980, while growth in the district population was significantly less than forecast.

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[1] A detailed description of the four alternative futures is presented in SEWRPC Technical Report No. 25, Alternative Futures for Southeastern Wisconsin.

[2] The 1970 census is the base for the population projections presented in this chapter.

TABLE 2

ANTICIPATED POPULATION CHANGES IN THE KENOSHA PLANNING DISTRICT UNDER FOUR GROWTH ALTERNATIVES: 1970-2000

Alternative Future Growth Scenario	Projected Population: 2000	Projected Change in Population 1970-2000	
		Persons	Percent
Moderate Growth Scenario			
Centralized Population Distribution.....	143,200	45,106	46.0
Decentralized Population Distribution...	162,800	64,706	66.0
Stable/Declining Growth Scenario			
Centralized Population Distribution.....	104,400	6,306	6.4
Decentralized Population Distribution...	96,800	-1,294	-1.3

Source: SEWRPC.

The future population level of the Chiwaukee Prairie-Carol Beach area, like that of the overall Kenosha metropolitan area, is partially dependent on a number of external factors, including general economic conditions. Future population growth within the study area will, however, also be dependent on the physical capability of the area to accommodate additional urban development. Any significant increase in the population of the study area, given the soil limitations which exist in the area, would require the extension of urban services and facilities, particularly public sanitary sewer service, to serve existing and new development within the area. As indicated in Chapter I, one of the primary purposes of this planning program is to identify a future urban service area within the Chiwaukee Prairie-Carol Beach area. The urban service area recommendations formulated under this planning program may thus be expected to have a significant influence on the future size and distribution of the population of this area.

LAND USE

The Chiwaukee Prairie-Carol Beach study area contains a diversity of land uses, including certain sensitive wetland and prairie areas which are essentially undisturbed by man's activities; areas which have been partially developed in residential use where existing houses are scattered intermittently along an extensive street network; relatively highly developed areas that represent true residential neighborhoods; and remnant agricultural areas. The existing land use pattern is in large measure a result of the extensive land subdivision activity which has taken place despite the physical development limitations which exist in the area. About 1,250 acres, or 69 percent of the total study area, have been subdivided for urban residential use. Plats for certain portions of the study area located south of 116th Street were recorded during the 1920's. Most of the platting activity within the study area, however, occurred between 1947 and 1956. A total of more than 2,700 residential lots have been platted along an extensive network of local streets within the study area (see Table 3 and Map 2).[3] While certain of the platted areas--

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[3]Some of the lots lying along the Lake Michigan shoreline, it should be noted, are now partially or entirely submerged as a result of Lake Michigan shoreline erosion.

TABLE 3

RECORDED SUBDIVISIONS IN THE CHIWAUKEE PRAIRIE-CAROL BEACH STUDY AREA

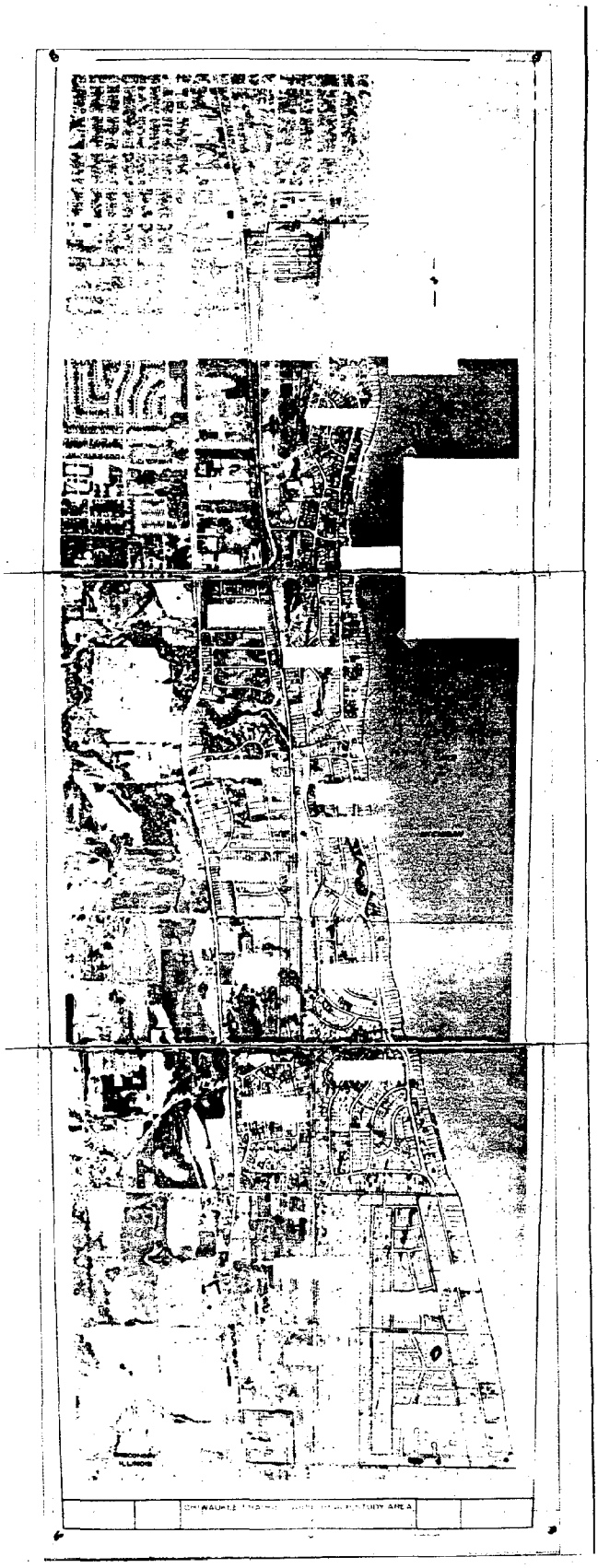
Subdivision Name	U. S. Public Land Survey		Year Recorded	Total Subdivision Area (acres)	Lots			
	Section	Quarter-Section			Developed	Undeveloped	Significantly Eroded or Submerged[a]	Total
Carol Beach Estates - Unit W.....	17 18	NW, SW, NE, SE	1948	73	75	71	4	150
Subdivision of Block 1, Carol Beach Estates - Unit W.....	17	NW	1955	6	8	7	1	16
Carol Beach Estates - Unit 5.....	17 20	SW NW	1952	33	31	22	3	56
Carol Beach Estates - Unit 5A.....	17 18 19 20	SW SE NE NW	1953	113	39	174	--	213
Carol Beach Estates - Unit 6.....	18 19	SE NE, NW	1953	96	45	212	--	257
Carol Beach Estates - Unit A.....	19	NE, NW, SE, SW	1952	103	32	50	--	82
Carol Beach Estates - Unit 4A.....	19	NE, SE	1953	16	0	40	--	40
Carol Beach Estates - Unit 4.....	19 20 30 29	NE, SE NW, SW NE NW	1951	99	35	151	11	197
Carol Beach Estates - Unit 7.....	19 30	SW, SE NE	1953	72	16	194	--	210
Carol Beach Estates - Unit 3.....	29 30	NW NE, SE	1948	93	24	170	18	212
Carol Beach Estates - Unit 1.....	30	NE, SE	1947	100	116	115	--	231
Carol Beach Estates - Unit 2.....	29 30	NW, SW NE, SE	1947	141	69	267	8	344
Schmidt's First Addition to Pleasant Prairie.....	31	SE	1924	25	9	104	--	113
Chiwaukee.....	32	NW, SW, SE	1921	74	31	43	31	105
Subdivision of Lots C and F, Chiwaukee.....	32	NW, SW	1922	44	0	75	4	79
Subdivision of Lots 185 and 186 of Lots C and F, Chiwaukee.....	32	NW, SW	1925	36	0	71	--	71
Chiwaukee Development Company's First Subdivision.....	32	NW	1948	53	13	153	--	166
Chiwaukee Development Company's Second Subdivision.....	32	SW	1956	72	--	197	--	197
Total	--	--	--	1,249	543	2,116	80	2,739

[a]Includes platted lots along the Lake Michigan shoreline at least half of whch are submerged as a result of erosion of the Lake Michigan shoreline and platted, but submerged, lots within the Trident Marina.

Source: SEWRPC.

MAP 2

SUBDIVIDED LANDS IN THE CHIWAUKEE PRAIRIE-CAROL BEACH STUDY AREA



particularly Carol Beach Estates Unit No. 1 and Carol Beach Estates Unit W--have developed as residential neighborhoods, much of the platted land remains sparsely developed owing to the high water table and other physical development limitations in the area, and natural resource values remain intact in many such areas.

As shown on Map 3 and indicated in Table 4, urban lands in combination encompass 493 acres, or 27 percent of the study area, with residential and transportation-utility lands accounting for most of this total. Residential lands account for 229 acres, or 13 percent of the study area. Residential development in the study area is located primarily between 116th Street and 85th Street. Concentrations of residential land occur along the Lake Michigan shoreline, as well as in Carol Beach Estates Unit No. 1 and Carol Beach Estates Unit W. Elsewhere, residential development is comparatively sparse and scattered in nature.

Lands devoted to transportation use and utility use in the study area in combination total 241 acres. These lands include existing local and arterial streets in the study area; the Chicago & North Western railway right-of-way through the study area; and two small areas devoted to utility use in the Wisconsin Electric Power Company property located north of 85th Street. There is a total of about 4.7 linear miles of arterial streets--consisting of STH 32 and CTH T--encompassing about 45.9 acres in the study area. There is a total of about 20.8 linear miles of existing local streets in the study area, encompassing about 150.9 acres. Many segments of the local street network within the study area have fallen into disrepair. It should be noted that certain segments of the street network proposed in original subdivision plats--in combination, totaling 6.1 linear miles and encompassing about 44.4 acres[4]--were never constructed, have been overgrown by vegetation subsequent to construction, or--in one case--have been destroyed as a result of erosion of the Lake Michigan shoreline.

Rural land uses--including wetlands, woodlands, agricultural lands, other open lands, and water--in combination still comprised 1,332 acres, or 73 percent of

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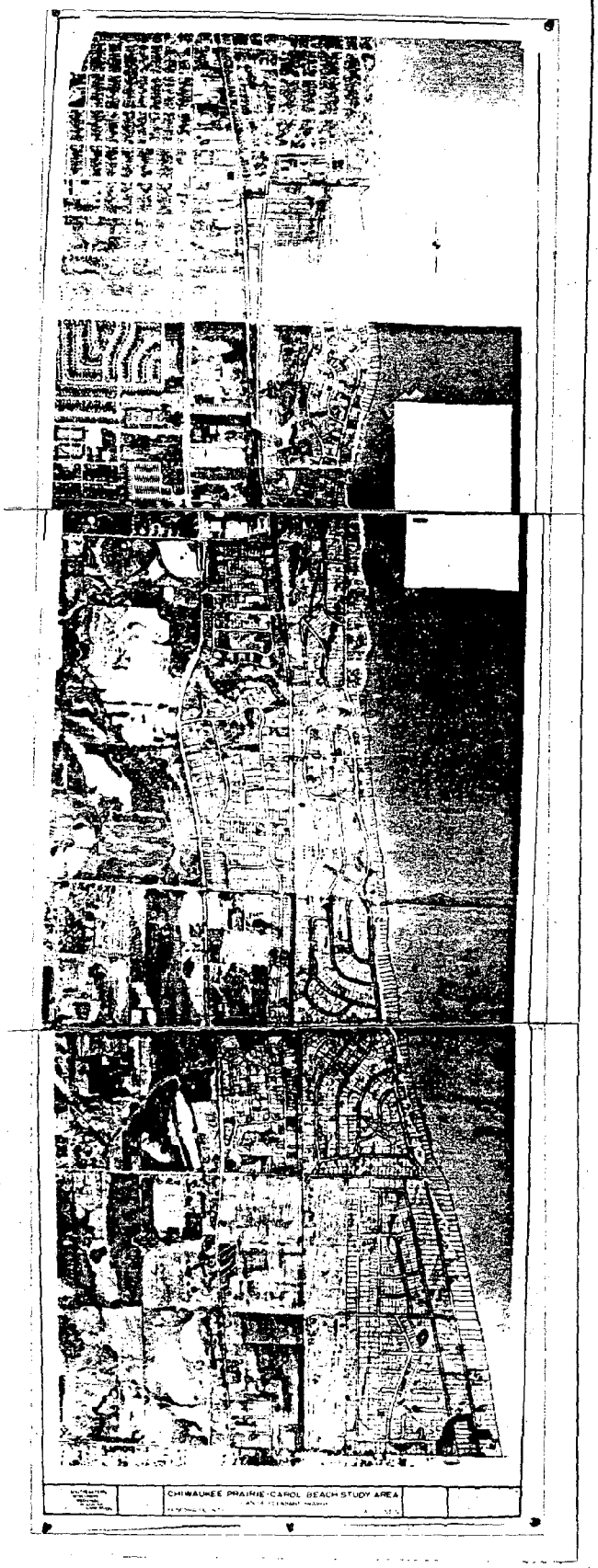
[4]This acreage is not included in the transportation and utility land use category for the study area.



MAP 3

EXISTING LAND USE IN THE CHIWAUKEE PRAIRIE-CAROL BEACH STUDY AREA: 1980

LEGEND

- RESIDENTIAL
- COMMERCIAL
- INSTITUTIONAL
- TRANSPORTATION AND UTILITIES
- RECREATIONAL
- WETLANDS
- WOODLANDS
- AGRICULTURAL
- OTHER OPEN LAND
- WATER

TABLE 4

EXISTING LAND USE IN THE PLEASANT PRAIRIE-
CAROL BEACH STUDY AREA: 1980

Land Use Category	Acres	Percent
Urban Land Uses		
Residential	228.6	12.5
Commercial	6.1	0.4
Transportation and Utilities	241.2	13.2
Governmental and Institutional	1.9	0.1
Recreational[a]	15.2	0.8
Subtotal	493.0	27.0
Rural Land Uses		
Wetlands	839.4	46.0
Woodlands	9.3	0.5
Agricultural	124.5	6.8
Other Open Land	347.5	19.1
Water	11.2	0.6
Subtotal	1,331.9	73.0
Total	1,824.9	100.0

[a]Includes intensively used outdoor recreation areas.

Source: SEWRPC.

the study area, in 1980. Wetlands comprised the largest rural category, with wetlands encompassing 839 acres, or 46 percent of the total study area. As shown on Map 3, wetlands within the study area are concentrated in an elongated corridor lying between the Chicago & North Western railway right-of-way and 1st Avenue, although some wetland areas occur west of the railway right-of-way as well.

LAND OWNERSHIP

Land ownership in the study area may be classified as public, quasi-public, and private. As indicated in Table 5, in 1982 publicly held lands in the study area totaled 414 acres, or 22 percent of the overall study area; quasi-public lands totaled 232 acres, or 13 percent of the study area; and private lands totaled 1,179 acres, or 65 percent of the study area. The existing land ownership pattern within the study area is shown on Map 4 and summarized in tabular form in Table 5.

Public Lands

In 1982, publicly held lands in the study area consisted primarily of park and open space lands, tax delinquent property, and street and highway rights-of-way. The Town of Pleasant Prairie had acquired 73 acres, or 4 percent of the study area for park and open space purposes through dedication in land subdivisions. The University of Wisconsin held title to a total of 97 acres, or 5 percent of the study area--all of these lands being located within The Nature Conservancy's Chiwaukee Prairie project area. Title to these areas was transferred to the University of Wisconsin by The Nature Conservancy under its Chiwaukee Prairie land acquisition program. Kenosha County had acquired through forfeiture as a result of delinquent property taxes a total of six lots, totaling 1.8 acres, or 0.1 percent of the study area. The Wisconsin Department of Transportation owned three lots--totalling 0.7 acre, or less than 0.1 percent of the study area located along the east side of Sheridan Road in the study area. Street and highway rights-of-way constituted 241 acres, or 13 percent of the study area--including 44 acres encompassed by rights-of-way which have been platted but never constructed or rights-of-way where streets were constructed but no longer exist.

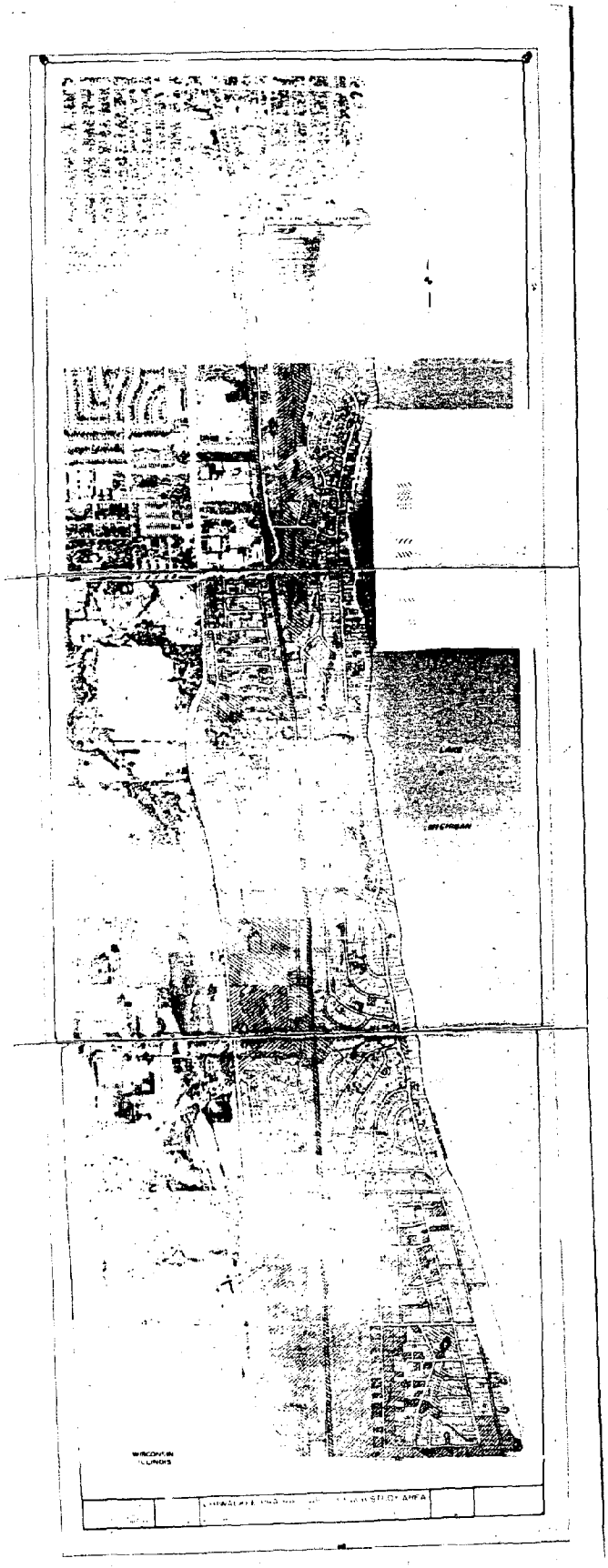
TABLE 5

LAND OWNERSHIP WITHIN THE CHIWAUKEE PRAIRIE-
CAROL BEACH STUDY AREA: 1982

Property Owner Classification		Area	
		Acres	Percent of Total
Public	Town of Pleasant Prairie.....	73.3	4.0
	Kenosha County.....	1.8	0.1
	University of Wisconsin.....	97.0	5.3
	Wisconsin Highway Commission.....	0.7	--[a]
	Other Public Lands (street and highway rights-of-way).....	241.2	13.2
	Subtotal	414.0	22.6
Quasi-Public	The Nature Conservancy.....	47.0	2.6
	Utility (Wisconsin Electric Power Company).....	141.5	7.8
	Railroad (Chicago & North-Western Railroad).....	43.6	2.4
	Subtotal	232.1	12.8
Private	Private Interests Whose Total Land Ownership in the Study Area is less than 5.0 acres.....	820.6	45.0
	Private Interests Whose Total Land Ownership in the Study Area is 5.0 - 24.9 acres.....	88.4	4.8
	Private Interests Whose Total Land Ownership in the Study Area is 25.0 acres or more.....	269.8	14.8
	Subtotal	1178.8	64.6
Total		1824.9	100.0

[a]Less than 0.1 percent.

Source: Kenosha County Assessor's Office and SEWRPC.



MAP 4

EXISTING LAND OWNERSHIP IN THE CHIWAUKEE PRAIRIE-CAROL BEACH STUDY AREA: 1982

LEGEND

PUBLIC LANDS

- TOWN OF PLEASANT PRAIRIE
- KENOSHA COUNTY
- UNIVERSITY OF WISCONSIN
- WISCONSIN HIGHWAY COMMISSION
- OTHER PUBLIC LANDS (STREET AND HIGHWAY RIGHTS-OF-WA

QUASI-PUBLIC LANDS

- THE NATURE CONSERVANCY
- UTILITY (WISCONSIN ELECTRIC POWER COMPANY)
- RAILROAD (CHICAGO & NORTH WESTERN RAILROAD)

PRIVATE LANDS

- PRIVATE INTERESTS WHOSE TOTAL LAND OWNERSHIP IN THE STUDY AREA IS LESS THAN 5.0 ACRES
- PRIVATE INTERESTS WHOSE TOTAL LAND OWNERSHIP IN THE STUDY AREA IS 5.0-24.9 ACRES
- PRIVATE INTERESTS WHOSE TOTAL LAND OWNERSHIP IN THE STUDY AREA IS 25.0 ACRES OR MORE

Quasi-Public Lands

In 1980, quasi-public lands in the study area included lands owned by The Nature Conservancy in the Chiwaukee Prairie area, lands owned by the Wisconsin Electric Power Company, and the right-of-way of the Chicago & North Western railway through the study area (see Table 5 and Map 4). The Nature Conservancy owned a total of 47 acres of land within the Chiwaukee Prairie--an area which, as previously noted in this report, represents one of the best remaining examples of prairie in the Great Lakes area. The Nature Conservancy initially transferred the ownership of land which it acquired in the Chiwaukee Prairie to the University of Wisconsin. The Nature Conservancy now maintains the title to additional lands as they are acquired under its continuing Chiwaukee Prairie land acquisition program. The Chiwaukee Prairie area itself is described in more detail in a later section of this chapter.

The Wisconsin Electric Power Company owned a total of about 141 acres of land in the study area, including nearly the entire portion of the study area north of 85th Street, as well as certain lands adjacent to the Chicago & North Western railway right-of-way south of this area. The portion of the study area located north of 85th Street and east of 7th Avenue is a unique sand dune-prairie complex, known as the Kenosha Sand Dunes, which is also described in more detail in a later section of this chapter.

The Chicago & North Western Transportation Company owned a total of about 44 acres of land in the study area in 1982, consisting of its railway right-of-way which traverses the study in a north-south direction.

Private Lands

In 1980, a total of 1,675 private interests--individuals and corporations--owned real property within the study area totaling 1,179 acres, or 65 percent of the study area. Of these, 1,663 owned less than 5 acres of land each, and together accounted for a total of 821 acres, or 45 percent of the study area (see Table 5). A total 7 private interests owned between 5 and 24 acres of land each, and together accounted for a total of 88 acres, or 5 percent of the study area. A total of 5 private interests owned 25 acres or more each, and together accounted for 270 acres or 15 percent of the total study area.

NATURAL RESOURCE BASE

The proper management of the natural resource base is essential to the provision of opportunities for participation in outdoor recreational activities as well as scientific and educational pursuits; to the maintenance of a healthy environment for all forms of life; and to the maintenance of an area's cultural and natural heritage and beauty. The Chiwaukee Prairie-Carol Beach area contains some of the outstanding natural resource features of the Southeastern Wisconsin Region. A description of the most important remaining features of the natural resource base is presented in this section. For analysis purposes, the various features of the natural resource base--including existing prairies, wetlands, and wildlife habitat areas--are treated on an individual, element-by-element basis below. These features are not mutually exclusive, however, and there is considerable overlap among the natural resource features described herein. For example, much of the existing prairie area in the study area consists of wetlands. Moreover, certain wetlands and prairie areas constitute important wildlife habitat. The identification of areas where concentrations of the individual features of the natural resource base exist is at the heart of the environmental corridor concept, which is described at the conclusion of this section.

Wetlands

Wetlands are defined as areas in which the water table is at or near the land surface and are characterized by both hydric soils, such as peats, mucks, or other organic soils, and by the growth of hydrophytes such as cattails, bulrushes, sedges, and willows. Wetlands perform an important set of natural functions which make them particularly valuable resources. Wetlands contribute to the maintenance of good water quality--except during unusual periods of high runoff following prolonged drought--by serving as traps which retain nutrients and sediments, thereby preventing them from reaching streams and lakes. They act to retain water during dry periods and hold it during flooding events, thus keeping the water table high and relatively stable and protecting communities against both flooding and drought. Wetlands which are located along the shorelines of lakes and streams help protect these shorelines from erosion. They may also serve as groundwater recharge areas. Wetlands are important resources for overall environmental health and diversity.

They provide essential breeding, nesting, resting, and feeding grounds and predator escape cover for many forms of fish and wildlife. The presence of water is also attractive to many upland birds and other animals. These attributes have the net effect of improving general environmental health; providing recreational, research, and educational opportunities; maintaining opportunities for hunting, trapping, and fishing; and adding to the aesthetics of an area. It should be noted that all wetlands do not necessarily perform all of these functions. For example, wetlands within the Chiwaukee Prairie-Carol Beach area do not contribute to shore protection. They do, however, contribute to water quality protection, particularly from nonpoint sources of pollution; storm water runoff management; groundwater recharge, although because of the proximity to Lake Michigan, this function has limited economic value; and to the ecological health and diversity of the area.

In addition to performing these important natural functions, wetlands have severe limitations for residential, commercial, and industrial devlopment. In general, these limitations are related to the high compressibility and instability, high water table, low bearing capacity, and high shrink-swell potential of wetland soils. In addition, the use of metal conduits in some wetland soil types is constrained because of the potential for corrosion. These limitations may result in flooding, wet basements, unstable foundations, failing pavements, and failing sewer and water lines. Moreover, there are significant and costly onsite preparation and maintenance costs associated with the development of wetland soils, particularly in connection with roads, foundations, and public utilities.

An inventory of wetlands in southeastern Wisconsin, including the Chiwaukee Prairie-Carol Beach study area, was recently completed by the Regional Planning Commission for the Wisconsin Department of Natural Resources under a statewide wetlands mapping program--officially known as the "Wisconsin Wetlands Inventory." The wetland inventory identified a total of 839 acres of wetlands within the study area, representing 46 percent of the total study area (see Map 3). The identified wetlands occur in association with the beach dune ridge and swale complex which characterizes much of the study area. The swales, or low areas, between the ridges are wetlands and are overgrown with cattails, bulrushes, sedges, grasses and other wetland vegetation; the ridges

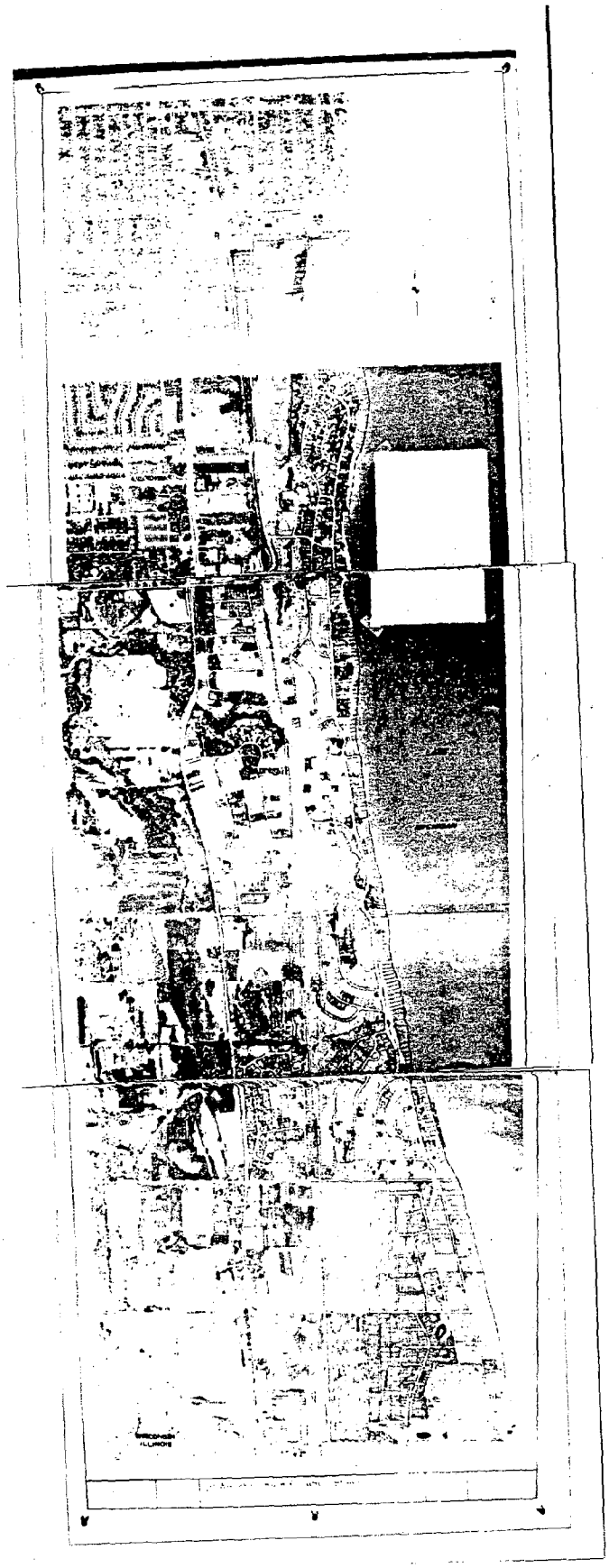
themselves are dry. The alternating ridges and swales in the study area are too small to be delineated individually, and much of the ridge and swale complex has been identified as wetland under the Wisconsin Wetland Inventory owing to the predominance of wetland vegetation.

Prairies

Prairies are open, or generally treeless areas in the landscape which are dominated by native grasses. Such areas have important ecological and scientific values and consist of four basic types: low or wet prairie, mesic or moderately moist prairie, dry prairie, and oak openings. Inventories conducted by the Regional Planning Commission indicate that prairies cover a significant portion--893 acres, or 49 percent of the study area (see Map 5). The identified prairies range from wet to dry prairies.

Wet prairies in the study area tend to occur in the swales and are dominated by chord, bluejoint, big bluestem, and muhly grasses. In addition, they contain such forbs as New England aster, gayfeather, prairie dock, Culvers root, and golden alexanders. Mesic prairies tend to occur on the dune slopes. These prairies are dominated by indiangrass, switchgrass, and big bluestem grass. Typical mesic prairie forbs include, among others, smooth blue aster, wild indigo, rattlesnake master, New Jersey tea, and compass plant. Dry prairies occur on the well-drained dune ridges. The dominant grasses include prairie dropseed, little bluestem, panic grass, and needle grass. Forbs characteristic of dry prairies in the study area include bergamot, bush clover, orange paccoon, leadplant, stiff goldenrod, and purple prairie clover. Oak openings are savannas dominated by the dry prairie grasses with up to 17 oak trees per acre, having less than a 50 percent canopy cover. The characteristic forbs in the oak openings are also the dry prairie species. The oak openings within the Chiwauee Prairie-Carol Beach area are generally located on the higher, well drained dunes. Most of the oak opening area within the study area have been developed.

An additional prairie-like habitat within the study area is the unstable beach dune community. Unstable beach dunes are recently deposited lacustrine sands that are characterized by such pioneer grasses and forbs as dune reed, wild rye grass, beach grass, wormwood, silverweed, and sea rocket. The best example



MAP 5

PRAIRIES IN THE CHIWAUKEE PRAIRIE-CAROL BEACH STUDY AREA: 1980

LEGEND

HIGH-VALUE PRAIRIE

MEDIUM-VALUE PRAIRIE

LOW-VALUE PRAIRIE

of this unstable beach dune community is located in the Kenosha Sand Dunes natural area. However, good examples of unstable beach dunes occur along the undeveloped portions of the Chiwaukee Prairie-Carol Beach shoreline. This unstable beach dune community occurs nowhere else along the Lake Michigan shoreline in southeastern Wisconsin.

Prairies within the study area have been evaluated by the Regional Planning Commission, based on a consideration of the diversity of native prairie plants present, the integrity of the plant community, and the extent of human disturbance. Based on this evaluation, prairie areas were assigned values of high, medium, and low quality (see Map 5).

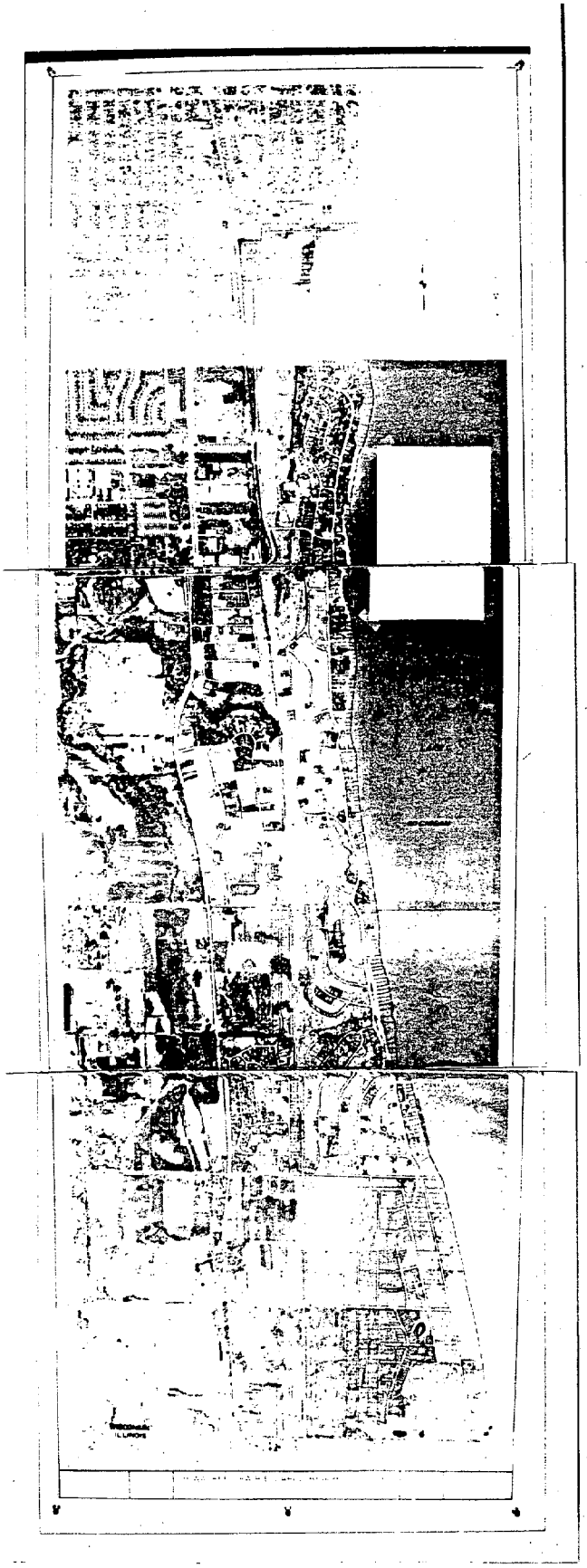
High-value prairies show a rich diversity of native prairie plants, and exhibit a plant community structure and integrity representative of the presettlement landscape. These areas have not been significantly disturbed by, or have essentially recovered from, man's activities. The high-value prairie areas are of the quality expected to occur within the designated state scientific area and natural areas of statewide or greater significance.

Medium-value prairies show a good diversity of native prairie plants and exhibit a structure and integrity that is less than ecologically ideal. These areas have evidence of past or present human disturbance.

Low-value prairies retain a moderate amount of natural cover. Usually, these areas have been greatly disturbed in the past, but because of the large native seed source available in the Chiwaukee Prairie-Carol Beach area, have begun to recover quite nicely.

It should be noted that both the medium- and low-value prairie areas, if left undisturbed, may be expected to increase in their native diversity and improve in their plant community structure and integrity with time.

About 345 acres, or 19 percent of the area, has been identified as high-value prairie. The most significant prairie area is the Chiwaukee Prairie located in the study area south of 116th Street. The Chiwaukee Prairie is recognized as one of the best remaining examples of wet to wet-mesic prairie in the Great



MAP 5

PRAIRIES IN THE CHIWAUKEE PRAIRIE-CAROL BEACH STUDY AREA: 1980

LEGEND

HIGH-VALUE PRAIRIE

MEDIUM-VALUE PRAIRIE

LOW-VALUE PRAIRIE

Lakes Region. Another large tract of high-value prairie--the western portion of the Kenosha Sand Dunes--is located in the study area north of 85th Street. Several smaller high-value prairie areas have also been identified in the area, the most important of these being located within a partially developed residential subdivision--Carol Beach Estates Unit No. 6--located south of 91st Street and east of 8th Avenue.

Medium-value prairie areas cover 380 acres, or 21 percent of the study area, while low-value prairie areas cover 168 acres, or 9 percent of the study area. As shown on Map 5, these medium- and low-value prairie areas lie primarily between 116th Street and 85th Street. Prairie vegetation remains intact throughout much of this area despite the installation of a local street system and the partial development of the area in the form of scattered single-family housing units.

Surface Waters and Floodlands

Surface water resources--consisting primarily of Lake Michigan but also of several minor streams tributary to Lake Michigan, narrow drainageways, and small ponds--form an important element of the natural resource base of the study area. The Lake Michigan shoreline along the eastern edge of the study area measures approximately 4.7 miles in length. The study area contains a portion of Barnes Creek, other minor streams tributary to Lake Michigan, and narrow drainageways which, in combination, total 9.4 linear miles. In addition, surface waters of the small ponds within the study area and of the Trident Marina basin within the study area in combination encompass about 10 acres, or less than one percent total study area.

The floodlands of a river or stream are the typically gently sloping areas contiguous with and usually lying on both sides of a river or a stream channel. Rivers and streams occupy the channels most of the time. However, during flood events, stream discharges increase markedly, and the channel may not be able to convey all of the flow. As a result, stages increase and the river or stream spreads laterally over the floodland.

For planning and regulatory purposes, floodlands are defined by the Regional Planning Commission as the areas, excluding the channel, subject to inundation

by the 100-year recurrence interval flood event. This is the event that would be reached or exceeded in severity once on the average of every 100 years. Stated another way, there is a one percent chance that this event will be reached or exceeded in severity in any given year. Floodland areas are generally not well suited to urban development, not only because of the flood hazard, but also because of high water tables and the presence of soils poorly suited to urban use. The floodland areas, however, generally contain important elements of the natural resource base such as high value wetlands and wildlife habitat.

Flood hazard areas in the Chiwaukee Prairie-Carol Beach study area have been delineated by the Regional Planning Commission on large-scale (1" = 200') topographic maps. Floodlands identified along Barnes Creek and unnamed streams tributary to Lake Michigan are shown on Map 6. Also shown on this map is a narrow band along the Lake Michigan shoreline which is subject to inundation by Lake Michigan on the average of once every 100 years. This band includes those lands lying below an elevation of 583.9 feet National Geodetic Vertical Datum (mean sea level datum), but does not include lands above this elevation subject to storm wave runup which could occur during the 100-year event. In combination, the flood hazard areas shown on Map 6 total 34 acres, or about 2 percent of the total study area.

Wildlife Habitat

Certain of the wetland and prairie areas described above constitute important wildlife habitat areas, particularly for pheasant, waterfowl, and songbirds. Regionally significant wildlife habitat areas in the study area are shown on Map 7. High-value wildlife habitat areas encompass 301 acres, or 17 percent of the study area; medium value wildlife habitat areas encompass 136 acres, or 8 percent of the study area; and low value wildlife habitat areas encompass 75 acres, or 4 percent of the study area.[5] The most significant wildlife habitat

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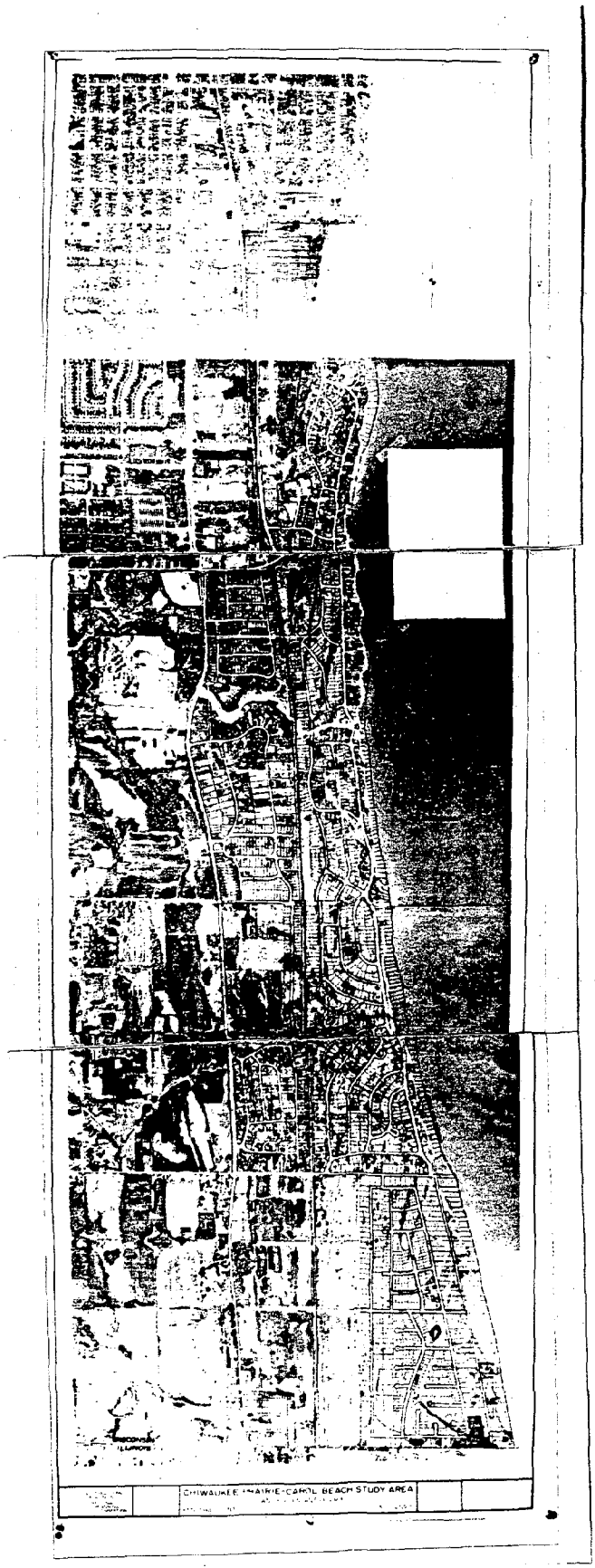
[5]High-value habitat areas contain a good diversity of wildlife, are adequate in size to meet all of the habitat requirements for the species concerned, and are generally located in proximity to other wildlife habitat areas. Medium-value wildlife habitat areas generally lack one of the three aforementioned criteria for a high-value wildlife habitat area. However, they do retain a good plant



MAP 6

SURFACE WATER RESOURCES AND FLOODLANDS IN THE CHIWAUKEE PRAIRIE-CAROL BEACH STUDY AREA

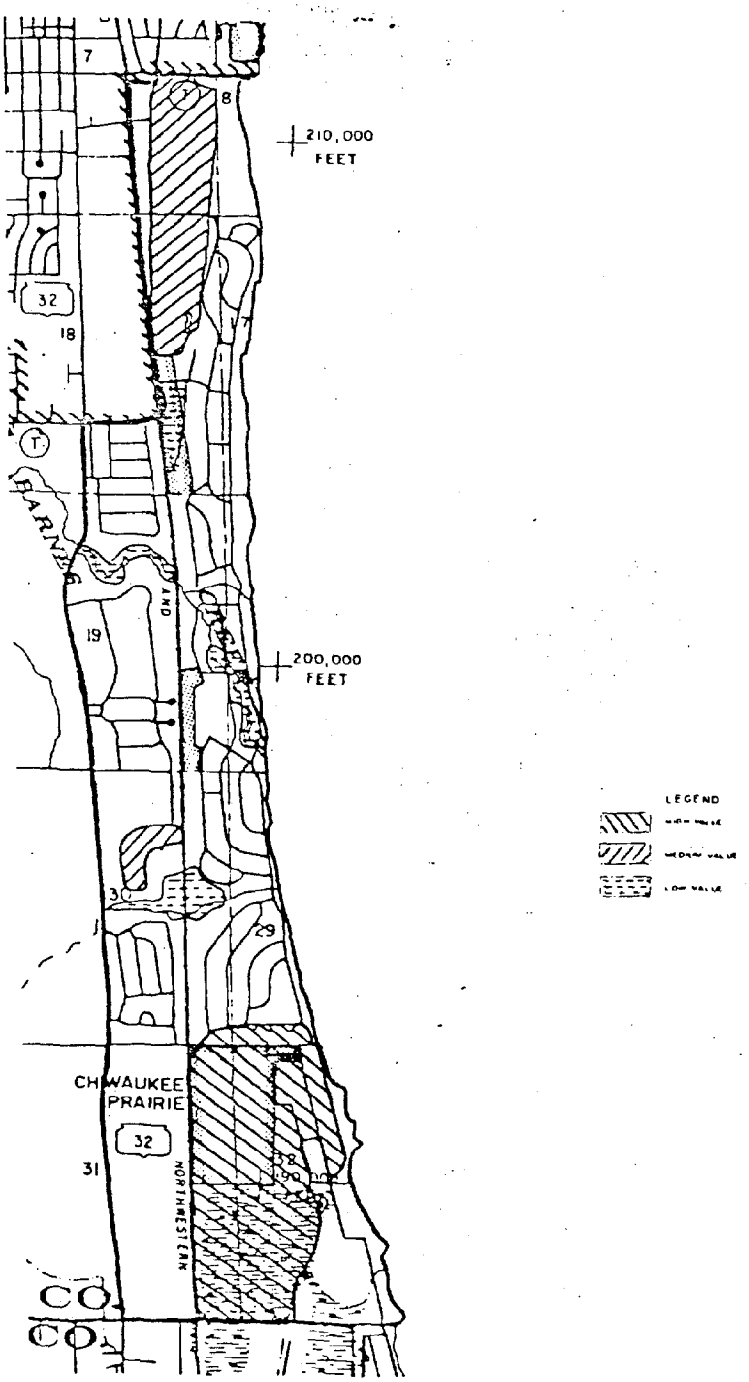
LEGEND

SURFACE WATER

100-YEAR RECURRENCE INTERVAL FLOODLANDS

MAP 7

WILDLIFE HABITAT IN THE CHIWAUKEE
PRAIRIE-CAROL BEACH STUDY AREA: 1980



area in the study area is the Chiwaukee Prairie which is situated east of the Chicago & North Western railway in the southernmost portion of the study area and which constitutes high-value migratory songbird habitat. This area remains as one of the few essentially natural resting places for migratory birds along the Lake Michigan shoreline within the Southeastern Wisconsin Region south of the City of Milwaukee. In addition, it is a nesting habitat area for the upland sandpiper whose population in Wisconsin is uncertain because of habitat loss.

It should be noted that Map 7 identifies only regionally significant wildlife habitat areas. There may be additional areas within the study area which constitute important wildlife habitat areas. For example, although not specifically designated as a wildlife habitat area, the entire Lake Michigan shoreline has major importance associated with the migratory movements of songbirds, waterfowl, shorebirds, gulls, terns, and raptors.

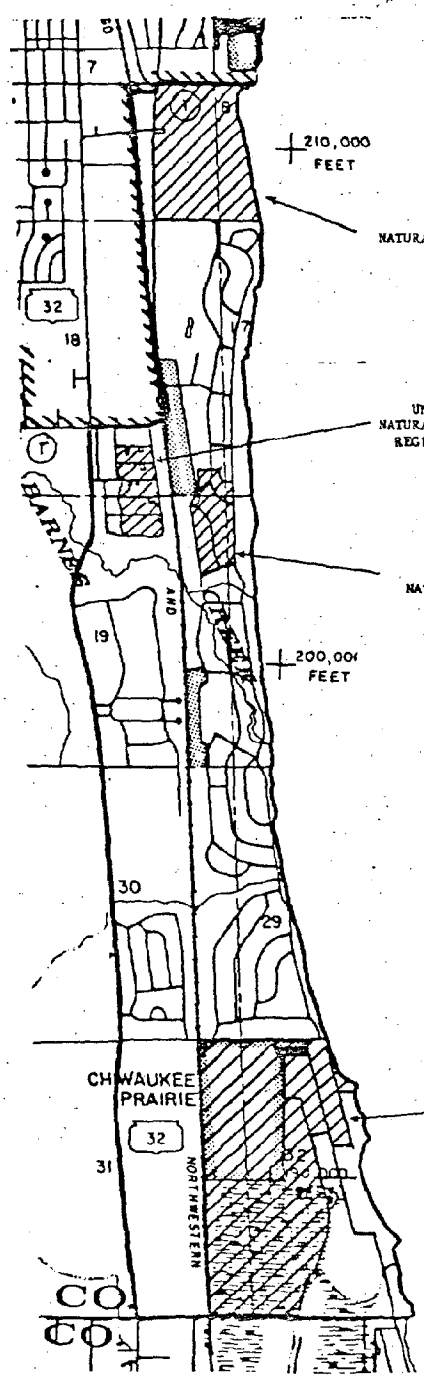
Natural Areas

Natural areas, as defined by the Wisconsin Scientific Areas Preservation Council, are tracts of land or water so little modified by man's activity, or sufficiently recovered from the effects of such activity, that they contain intact native plant and animal communities believed to be representative of the presettlement landscape. The Wisconsin Scientific Areas Preservation Council has identified two such natural areas in the Pleasant Prairie-Carol Beach study area--namely, the Chiwaukee Prairie, which has been designated a State Scientific Area and which, as previously noted, represents one of the best remaining examples of prairie in the Great Lakes area; and the Kenosha Sand Dunes site, which has been designated a natural area of statewide or greater importance (see Map 8). A description of these important natural areas is presented in Table 6.

(Footnote 5 continued) and animal diversity. Low-value habitat areas are remnant in nature in that they generally lack two or more of the three aforementioned criteria for a high-value wildlife habitat, but may, nevertheless, be important if located in close proximity to other high- or medium-value wildlife habitat areas, if they provide corridors linking higher value wildlife habitat areas, or if they provide the only available range in the area.

MAP 8

NATURAL AREAS
IN THE
CHIWAUKEE PRAIRIE--
CAROL BEACH STUDY AREA



KENOSHA SAND DUNES--
NATURAL AREA OF STATEWIDE SIGNIFICANCE

UNNAMED PRAIRIE--
NATURAL AREA OF COUNTY OR
REGIONAL SIGNIFICANCE

UNNAMED WET PRAIRIE AND FEN--
NATURAL AREA OF STATEWIDE SIGNIFICANCE

CHIWAUKEE PRAIRIE--
STATE SCIENTIFIC AREA

(The Nature Conservancy
project acquisition boundary)

TABLE 6

NATURAL AREAS IN THE CHIWAUKEE PRAIRIE-CAROL BEACH STUDY AREA

Area Name	Location and Size	Natural Area Classification	Ownership	Description and Comments
Chiwaukee Prairie....	U. S. Public Land Survey T1N, R23E, Sections 31, 32; 240 acres	State scientific area	University of Wisconsin and The Nature Conservancy	A rich prairie and marsh located on swell and swale topography. Over 350 plant species been documented from the prairie, some of which are very rare in the state including the chestnut sedge, white-fringed orchid, pink milkwort, and roundstemmed false foxglove. Scattered oaks in portions give a savanna aspect to the tract. The area is also designated as a National Natural Landmark and is one of the most important prairies in Wisconsin. Land acquisition is conducted by the by The Nature Conservancy. Critical plant species present.
Kenosha Sand Dunes...	U. S. Public Land Survey T1N, R23E, Sections 7, 8; 120 acres	Natural area of state-wide or greater significance	Wisconsin Electric Power Company	One-half mile of frontage on Lake Michigan containing well developed dunes and dune succes-cession patterns (foredunes to swale to wet prairie). The diversity of beach plant species is good. Some ditching has been done behind the dune area but it remains in good condition and is an excellent observation area for migrating shore birds. The Lake Michigan shore has been riprapped.
Unnamed Prairie.....	U. S. Public Land Survey T1N, R23E, Sections 18, 19; 25 acres	Natural area of county or regional significance	Private	An area possessing rich prairie flora which serves as a critical habitat area for the federally- and state-threatened prairie white-fringed orchid. The area has been partially developed as a residential subdivision.
Unnamed Wet Prairie and Fen.....	U. S. Public Land Survey T1N, R23E, Sections 18, 19, and 20	Natural area of state-wide or greater significance	Private	A rich wet prairie and calcareous fen flora located on swell and swale topography. Several rare plant species, including false asphodel, Ohio goldenrod, spike blazing star, and green milkweed, occur at this site.

Source: Scientific Area Section, Wisconsin Department of Natural Resources; the Office of Coastal Management, Wisconsin Department of Administration; and SEWRPC.

It should be noted that the Wisconsin Scientific Areas Preservation Council formally identifies the boundaries of the Chiwaukee Prairie State Scientific Area as those lands within The Nature Conservancy Chiwaukee Prairie project acquisition area which are actually owned by The Nature Conservancy or the University of Wisconsin. Thus, the size of the formally recognized Chiwaukee Prairie State Scientific Area increases as additional prairie lands are acquired by The Nature Conservancy. Map 8 shows the lands identified by The Nature Conservancy for preservation through eventual public or quasi-public ownership. The "project boundary" encompasses a total area of 240 acres. Map 4 identifies the lands within this area which were actually owned by the Nature Conservancy or the University of Wisconsin in 1982. These lands, in combination, total 144 acres, or 60 percent of the total Nature Conservancy project area.

In addition to the aforementioned natural areas, the Regional Planning Commission has identified two other important natural areas--an unnamed prairie located south of 91st Street and an unnamed wet prairie and fen located north of 96th Street--and has recommended that these sites also be considered for inclusion in the State Natural Areas Inventory as a natural area of county or regional significance and a natural area of statewide or greater significance, respectively (see Table and Map 8).

Environmental Corridors

Environmental Corridor Concept: Previous sections of this chapter have described on an individual basis the most important elements of the natural resource base in the Chiwaukee Prairie-Carol Beach study area. One of the most important tasks completed under the regional planning effort was the identification and delineation of those areas in southeastern Wisconsin in which concentrations of natural resource elements occur. The process developed by the Regional Planning Commission for this purpose involves a mapping overlay technique through which areas containing concentrations of natural resource elements and natural resource related elements are identified. Natural resource elements considered in this mapping process are the following: lakes, rivers, and streams and their associated shorelands and floodlands; wetlands; woodlands; prairies; wildlife habitat areas; wet, poorly

drained, and organic soils; and rugged terrain and high relief topography. Natural resource-related elements considered in this mapping process are the following: existing park and open space sites; potential park and open space sites; historic sites; significant scenic areas and vistas; and natural and scientific areas.

The delineation of these twelve natural resource and natural resource-related elements on a map results in an essentially linear pattern of relatively narrow, elongated areas within the Region which have been termed "environmental corridors" by the Commission. Primary environmental corridors include a wide variety of the above mentioned important resource and resource-related elements and are, by definition, at least 400 acres in size, two miles in length, and 200 feet in width.

It should be noted that, while environmental corridors consist primarily of undeveloped open space lands having significant natural resource or natural resource-related features, small areas of urban development may, under certain circumstances, be included in the environmental corridor configuration. In this regard, small enclaves of existing residential development less than five acres in size surrounded by environmentally significant open space lands are included in the primary environmental corridor under the environmental corridor mapping process. Moreover, the primary environmental corridor encompasses, at a minimum, the lands--including developed lands--within 75 feet of the shoreline of major rivers and inland lakes. Along the Lake Michigan shoreline, because of the generally wider beach and bluff areas and other natural resource features associated with the Lake Michigan shoreline, the environmental corridor encompasses at a minimum the width of the beach and an area 200 feet inland from the inland edge of the beach.

Primary Environmental Corridors Within the Study Area: Primary environmental corridors typically encompass a relatively small portion of the total area of a community or group of communities. For example, within the Kenosha Planning District, which includes the portion of Kenosha County lying east of Interstate Highway 94, the identified primary environmental corridors encompass a total area of about 5,700 acres, or about 10 percent of the total area of the district. Within the Pleasant Prairie-Carol Beach study area, however, a

comparatively large portion--74 percent, or 1,350 acres of the 1,825 acre study area--has been identified as primary environmental corridor owing to the concentration of natural resource features--particularly prairie areas, wetlands, and wildlife habitat areas--which occur in the area. The identified primary environmental corridor extends the full length of the study area east of the Chicago & North Western railway, excluding only the intensively developed residential areas (see Map 9). The identified environmental corridor also includes a significant portion of the study area west of the Chicago & North Western railway, although the environmental corridor is somewhat more fragmented by existing residential development west of the railway.

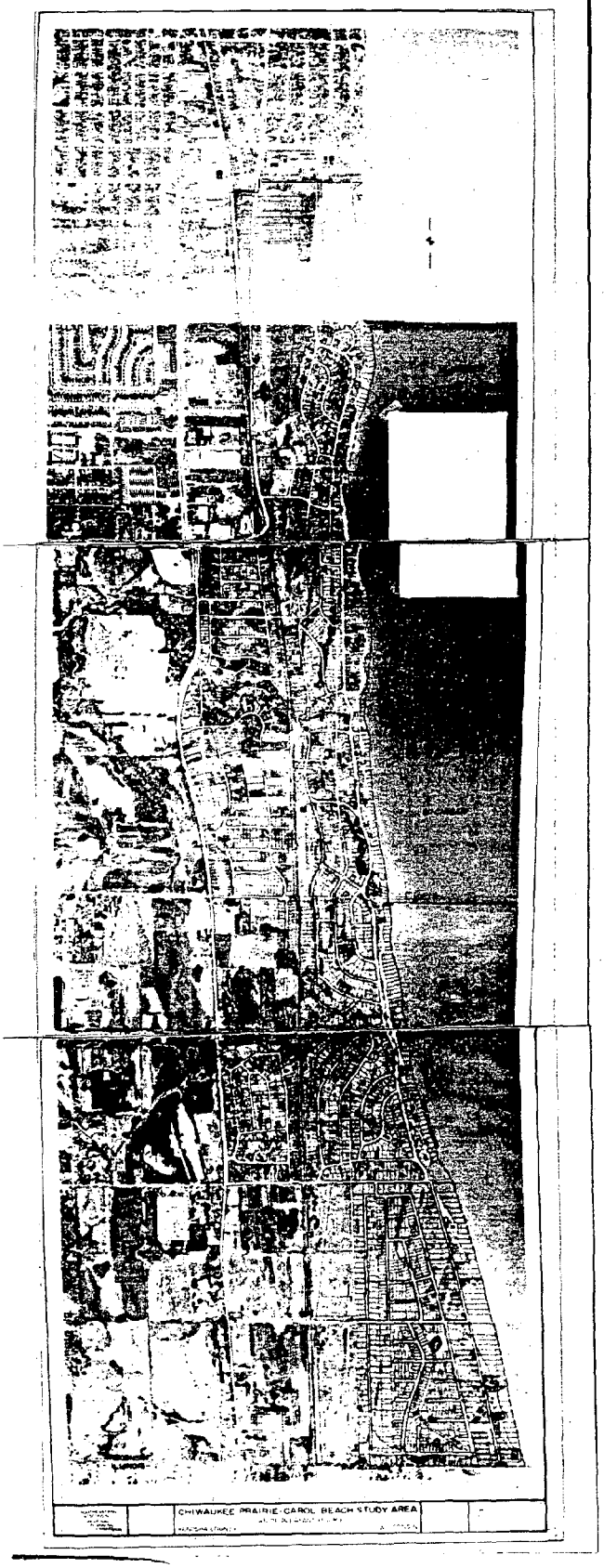
In any discussion of environmental corridors and important natural resource features, it is important to point out that, because of the many interacting relationships existing between living organisms and their environment, the destruction or deterioration of a single important element of the total environment may lead to a chain reaction of deterioration and destruction. The drainage of wetlands, for example, may have far reaching effects, since such drainage may destroy wildlife habitat, groundwater recharge areas, and natural filtration and floodwater storage areas of interconnecting stream systems. The resulting deterioration of surface water quality may, in turn, lead to a deterioration of the quality of groundwater resources. Similarly, the destruction of woodland cover may result in soil erosion, stream siltation, more rapid runoff, and increased flooding, as well as the destruction of wildlife habitat. Although the effects of any one of the environmental changes may not in and of itself be overwhelming, the combined effects may eventually lead to a serious deterioration of the underlying and supporting natural resource base and of the overall quality of the environment. The need to maintain the integrity of the remaining environmental corridors, to the maximum extent practicable, should thus be apparent.

SOIL SUITABILITY

A need exists in any land use planning program to examine not only how land and soils are presently used, but how they can best be used and managed. This requires a detailed soil survey which maps the geographic location of various

MAP 9

PRIMARY ENVIRONMENTAL CORRIDORS IN THE
CHIWAUKEE PRAIRIE-CAROL BEACH STUDY AREA: 1980

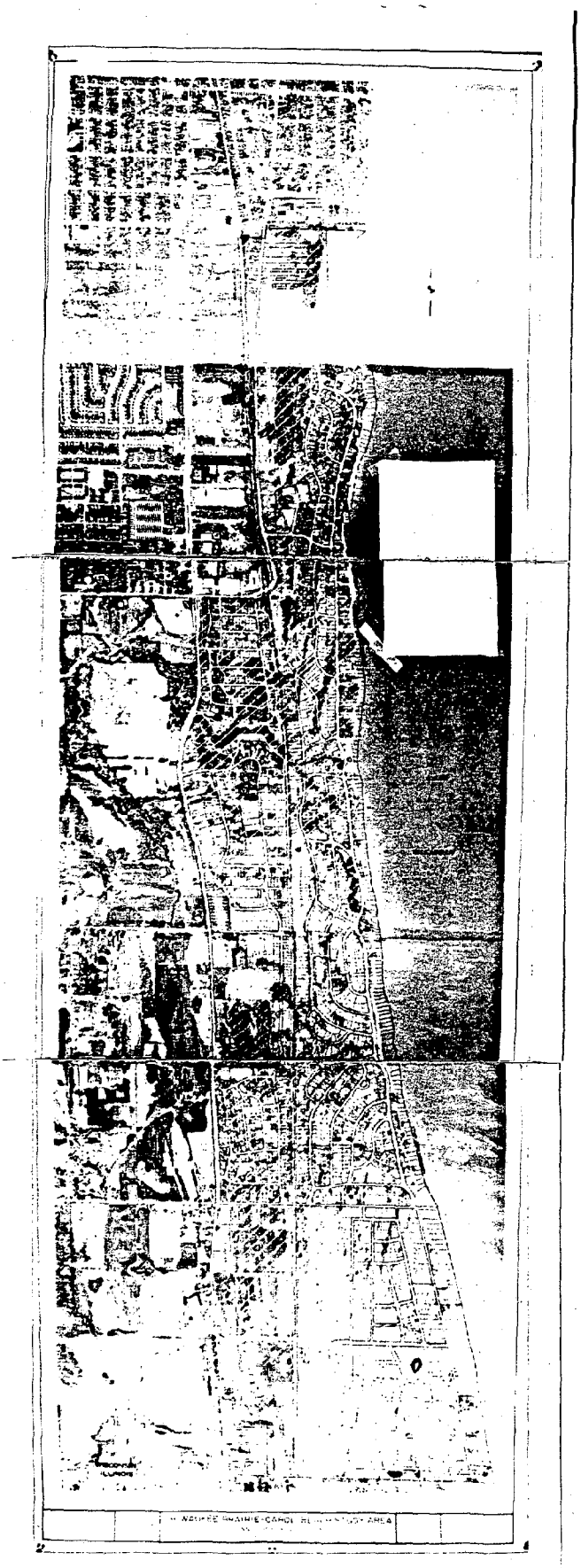


kinds of soils; identifies their physical, chemical, and biological properties; and interprets these properties for land use and public facilities planning. Such a soil survey of the entire Southeastern Wisconsin Region was completed in 1965 by the U. S. Department of Agriculture, Soil Conservation Service, under contract to the Regional Planning Commission.

Through the use of data provided by the soil survey, the Commission staff has prepared interpretive maps showing the suitablity of certain soil types for residential, recreational, and other land uses. Since much of the Chiwaukee Prairie-Carol Beach study area has been platted for residential development, attention is focused herein on the suitability of soils for residential development.

Map 10 shows those portions of the Pleasant Prairie-Carol Beach study area which are covered by soils poorly suited for residential development without public sanitary sewer service on lots less than one acre in size. Most of the platted residential lots in the study area, it should be noted, are less than one-half acre in size. As shown on this map, most of the study area--1,490 acres, or 82 percent of the total area--is covered by soils which have severe or very severe limitations for such development. These soils generally have a high water table and, in some instances, low permeability rates, which prevents the proper operation of conventional on-site septic systems.

Map 11 shows those portions of the study area which are covered by soils poorly suited for residential development even with public sanitary sewer service. These areas--which encompass 480 acres, or 26 percent of the study area--distributed throughout the study area, being somewhat more prevalent east of the Chicago & North Western railway, however. It is important to note that in addition to those areas having severe and very severe limitations for sewered residential development, much of the study area is covered by soils having moderate limitations for such development as a result of the high water table, which can hinder the installation and proper operation of sanitary sewers. It is recognized that potential sewer construction problems can be overcome through special techniques including temporarily lowering the water table during construction. It is also recognized that pipe materials currently used for sanitary sewers can be operated with acceptable levels of

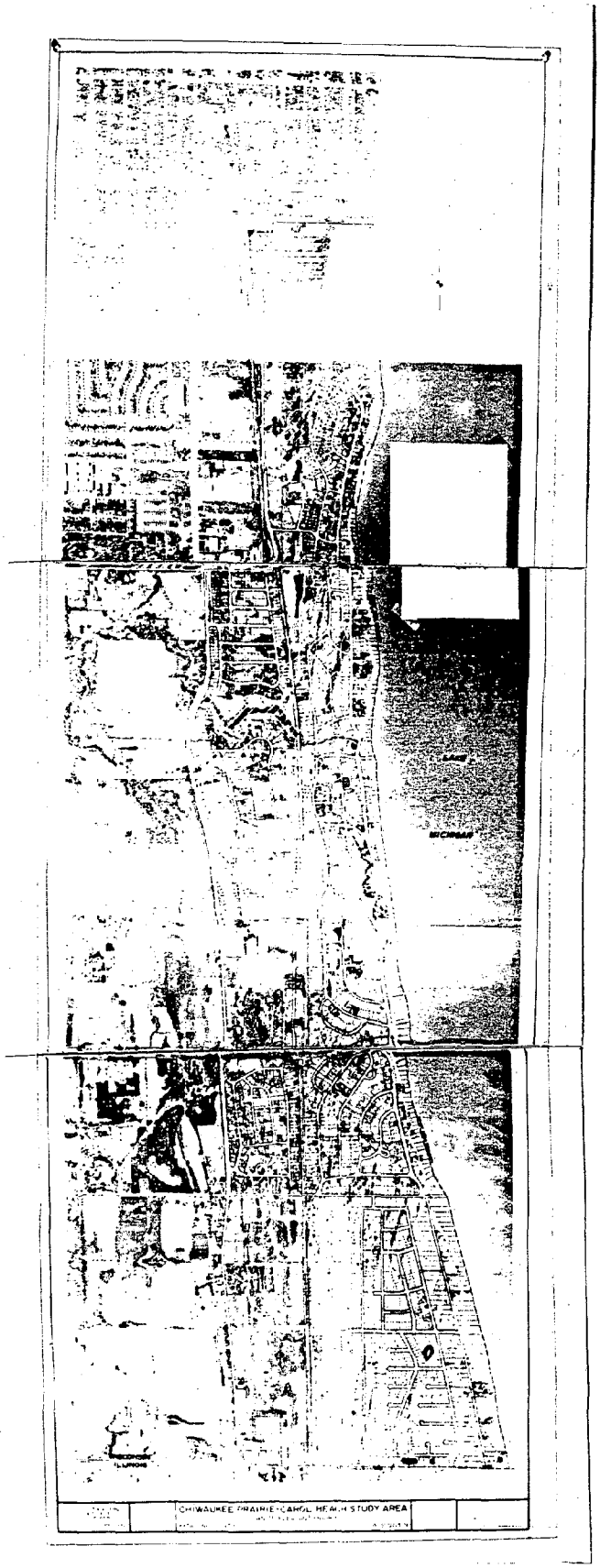


MAP 10

SUITABILITY OF SOILS IN THE CHIWAUKEE PRAIRIE-CAROL BEACH STUDY AREA FOR RESIDENTIAL DEVELOPMENT WITHOUT PUBLIC SANITARY SEWER SERVICE

LEGEND

SOILS WITH SEVERE OR VERY SEVERE LIMITATIONS FOR RESIDENTIAL DEVELOPMENT WITHOUT PUBLIC SEWER SERVICE ON LOTS LESS THAN ONE ACRE IN SIZE



MAP 11

SUITABILITY OF SOILS IN THE CHIWAUKEE PRAIRIE-CAROL BEACH STUDY AREA FOR RESIDENTIAL DEVELOPMENT WITH PUBLIC SANITARY SEWER SERVICE

LEGEND

SOILS WITH SEVERE OR VERY SEVERE LIMITATIONS FOR RESIDENTIAL DEVELOPMENT WITH PUBLIC SEWER SERVICE

infiltration and inflow even if installed below the water table, provided the sewers are properly designed and constructed. However, the installation of sewers in areas with high groundwater levels will generally result in higher costs and a higher potential for infiltration and inflow. Thus, the identification of any future sewer service areas within the study area should take into account the prevalent high water table, the attendant difficulties in installing sanitary sewers in such areas, and the increased potential for infiltration which may cause operational problems. Furthermore, during the development process, residential units constructed in such areas should be properly sited and designed to avoid problems such as wet basements and sinking foundations which may occur in areas with high groundwater.

SEWAGE TREATMENT PROBLEMS

There is no public or private centralized sanitary sewerage service within the Chiwaukee-Carol Beach study area. Wastewater from existing urban development is disposed of through the use of on-site sewage disposal systems. Data previously presented in this chapter indicates that those forms of urban development which generate wastewater--including residential, commercial, institutional, and intensively developed recreation land--in combination account for 252 acres, or 14 percent of the total study area. Residential land alone accounts for 229 acres, or 91 percent of this total. There were about 515 residential structures in the study area in 1980, with the vast majority of these being single-family residences.

An on-site sewage disposal system which is used to serve residential and other forms of urban development where centralized sanitary sewage service is not available may be a conventional septic tank system, a mound system, or a holding tank.[6] Of these, the conventional septic tank system is the most

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[6]Conventional septic tank systems consist of two components--a septic tank, or water-tight basin which is intended to provide partial treatment of raw wastewater by skimming, settling, and anaerobic decomposition; and a soil absorption field which is intended to provide final treatment and disposal of liquid discharged from the septic tank. Both components are installed below ground surface.

commonly used within the study area, and the number of mound systems and holding tanks which have been installed within the study area is relatively small. In this regard, a review of sanitary permits on file in the Kenosha County Office of Planning and Zoning Administration identified a total of six mound systems and 18 holding tanks which have been authorized for installation within the study area (see Map 12). Other existing residential development in the study area may be assumed to be served by conventional septic tank systems.

Providing that the system is installed, used, and maintained properly and that there is an adequate depth of moderately permeable, unsaturated soil below the drainage field, a conventional septic tank system should operate with few problems for periods of up to 20 years. However, rural residential housing is not always developed in areas having ideal soil conditions. When septic tank systems are installed on unsuitable soils, septic effluent may not receive the benefit of soil filtration and may, instead, be discharged directly to the surface, creating a public health hazard as well as an obnoxious nuisance condition.

As noted in the previous section of this chapter, most of the study area is covered by soils which are unsuitable for septic tank systems, owing to the generally high water table and, in some areas, low permeability rates. Since the enactment of the Kenosha County sanitary code and private sewage system ordinance in July 1980, Kenosha County has identified 11 failing septic systems within the study area, with all of these systems serving residential

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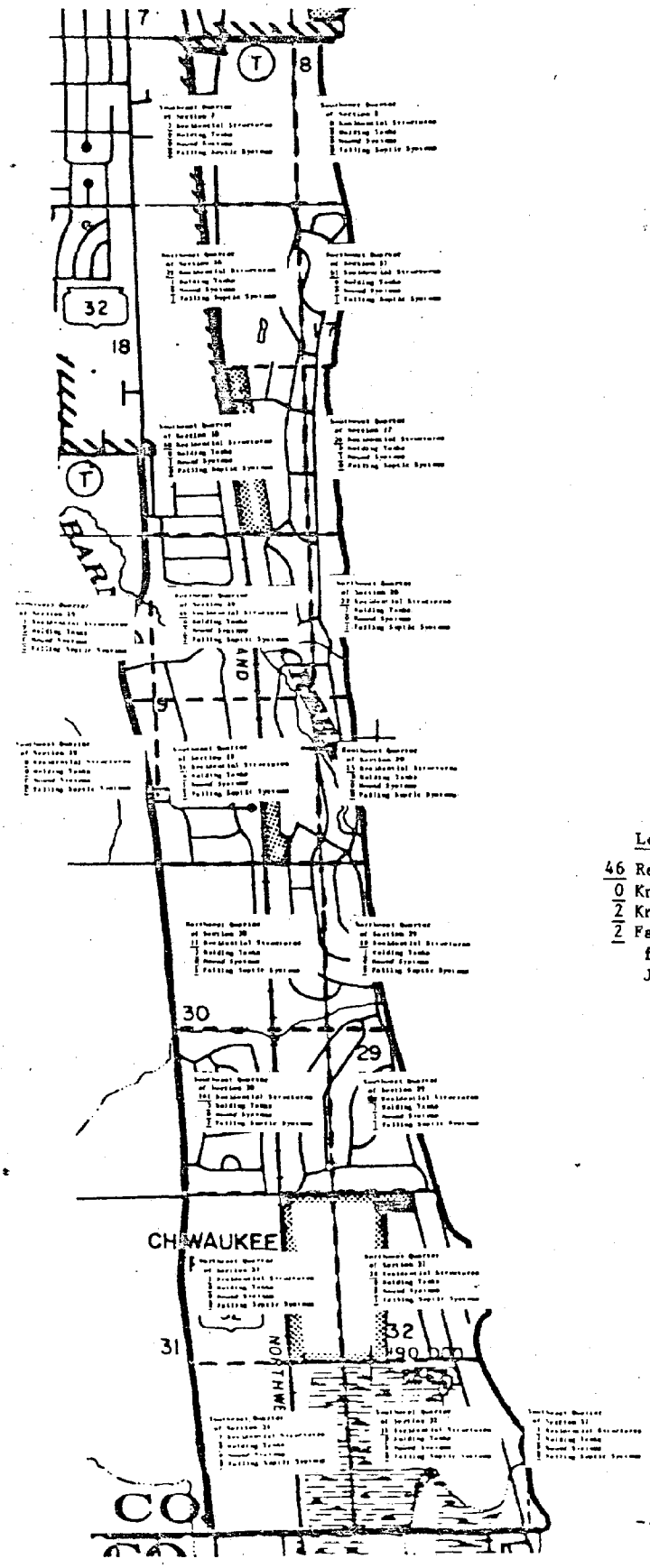
(Footnote 6 Continued)
Mound systems differ from conventional gravity flow septic tank systems in that they utilize mechanical facilities to pump septic tank effluent through distribution pipes placed in fill on the top of the natural soil. When in place, this fill takes on the appearance of a mound. These systems are permitted on a limited basis in Wisconsin to overcome natural soil limitations due to impermeability, high ground water, or shallow bedrock.

A holding tank is a water-tight tank which is placed below ground surface to collect and temporarily store wastewater until such a time that disposal is convenient or the tank is filled to capacity. The wastewater is then intended to be pumped out of the holding tank into a truck and transported to a sewage treatment plant for treatment and disposal.

MAP 12

RESIDENTIAL STRUCTURES, KNOWN HOLDING TANKS, KNOWN MOUND SYSTEMS, AND IDENTIFIED FAILING SEPTIC SYSTEMS BY U. S. PUBLIC LAND SURVEY QUARTER SECTION IN THE CHIWAUKEE PRAIRIE-CAROL BEACH STUDY AREA



Legend

46 Residential Structures: 1980
0 Known Holding Tanks: 1982
2 Known Mound Systems: 1982
2 Failing Septic Systems Identified by Kenosha County Between July 1, 1980 and July 1, 1982

structures. These 11 residential structures represent 2 percent of all residential structures in the study area. Most of these failing systems are distributed throughout the portion of the study area lying between 116th Street and 85th Street (see Map 12). It is important to note that Kenosha County has conducted a private sewage system regulatory program only during the past two years. Given the extent of existing residential development served by septic tank systems in areas covered by soils which are not suitable for such development, it is likely that there are many other failing septic systems in the study area. Although they are difficult to identify and are not always readily apparent even to individual property owners concerned, such conditions must, insofar as possible, be taken into account in the identification of future sanitary sewer service areas within the study area.

SUMMARY AND CONCLUSIONS

This chapter has presented a description of the Chiwaukee Prairie-Carol Beach study area, including information regarding population levels, land use and land ownership patterns, the existing natural resource base, and existing sewage disposal facilities and problems. The most important inventory findings of this chapter are summarized on a point-by-point basis below.

1. The Chiwaukee Prairie-Carol Beach study area is located in the eastern portion of the Town of Pleasant Prairie, Kenosha County, and is bounded by Lake Michigan on the east; by the Wisconsin-Illinois state line on the south; by STH 32 and the Chicago & North Western railway right-of-way on the west; and by 80th Street on the north. The study area encompasses 1,825 acres, or about 8 percent of the total area of the Town of Pleasant Prairie.

2. The resident population of the study area stood at 1,375 persons in 1980. Between 1970 and 1980, the study area population increased by 259 persons, or 23 percent from the 1970 population of 1,116.

3. About 1,250 acres, or 69 percent of the study area, have been subdivided for urban residential use. Plats for certain portions of the study area were recorded during the 1920's. Most of the platting

activity, however, occurred between 1947 and 1956. A total of about 2,700 lots have been created through this platting activity and about 543 lots, or 20 percent of this total, are actually developed. Some of the originally platted lots are now partially or entirely submerged as a result of Lake Michigan shoreline erosion. Much of the platted land remains sparsely developed owing to the high water table and other physical development limitations in the study area.

4. Urban land uses account for 493 acres, or 27 percent of the study area, with residential and transportation-utility lands accounting for most of this total. Residential lands encompass 229 acres, or 13 percent of the total study area. Concentrations of residential land occur along the Lake Michigan shoreline as well as in Carol Beach Estates Unit No. 1 and Carol Beach Estates Unit W; elsewhere, residential development is comparatively sparse and scattered in nature. Lands devoted to transportation and utility use in the study area total 241 acres, representing 13 percent of the study area. There is a total of 4.7 linear miles of arterial streets--consisting of STH 32 and CTH T--encompassing about 45.9 acres in the study area. There is a total of about 20.8 linear miles of existing local streets in the study area encompassing about 150.9 acres. Certain segments of the street network proposed in the original subdivision plats--in combination totaling 6.1 linear miles and encompassing about 44.4 acres--were never constructed, have been overgrown by vegetation subsequent to construction, or--in one case--have been destroyed as a result of erosion of the Lake Michigan shoreline.

5. Rural land uses--including wetlands, woodlands, agricultural lands, other open lands, and water--in combination still comprised 1,332 acres, or 73 percent of the study area in 1980. Wetlands alone encompassed 839 acres, or 46 percent of the study area.

6. About 414 acres, or 22 percent of the study area, consisted of publicly held lands in 1982. These public lands included 73.3 acres held by the Town of Pleasant Prairie; 1.8 acres held by Kenosha

County; 97.0 acres held by the University of Wisconsin; 0.7 acres held by the Wisconsin Highway Commission; and 241.2 acres which consisted of street and highway rights-of-way. About 232.1 acres, or 13 percent of the study area, consisted of quasi-public lands. These quasi-public lands included 47.0 acres held by The Nature Conservancy; 141.5 acres held by the Wisconsin Electric Power Company; and 43.6 acres held by the Chicago & North Western Railroad Company. About 1,178.8 acres, or 65 percent of the study area, consisted of privately held land. A total of 1,675 private interests owned real property within the study area. Of these, 1,663 owned less than five acres of land each and together accounted for a total of 820.6 acres, or 45 percent of the study area.

7. The Chiwaukee Prairie-Carol Beach study area contains some of the outstanding natural resource features found within the Southeastern Wisconsin Region. Despite the inroads of urban development within the study area, much of the natural resource base remains essentially intact. While they have been described in this chapter on an individual, element-by-element basis, the various features of the natural resource base, including wetlands, prairies, and wildlife habitat areas, are not mutually exclusive and there is considerable overlap among them. As noted above, wetlands encompass a total of 839 acres, or 46 percent of the study area. Prairies, including wet prairies, cover 893 acres, or 49 percent of the study area. Certain of the wetland and prairie areas constitute important wildlife habitat, particularly for pheasant, waterfowl, and some birds. In this regard, identified high-value wildlife habitat areas encompass 301 acres, or 17 percent of the study area; medium-value wildlife habitat areas encompass 136 acres, or 8 percent of the study area; and low-value wildlife habitat areas encompass 75 acres, or 4 percent of the study area. Although not specifically identified as a wildlife habitat area, the entire Lake Michigan shoreline--which measures approximately 4.7 linear miles within the study area--has major importance associated with the migratory movement of song birds, waterfowl, shore birds, gulls, terns, and raptors. Owing to

the concentration of natural resource elements which occurs throughout the study area, a large portion of the study area--74 percent or 1,350 acres of the 1,825-acre study area--has been identified by the Planning Commission as a primary environmental corridor.

8. Two areas within the Chiwaukee Prairie-Carol Beach study area are particularly noteworthy because of the outstanding natural resource features which they contain. The first area is the Chiwaukee Prairie, a prairie and marsh located on swell and swale topography, in the southernmost portion of the study area. The Chiwaukee Prairie, which has been designated a state scientific area by the Wisconsin Scientific Areas Preservation Council, is currently under acquisition by The Nature Conservancy. The second area is the Kenosha Sand Dunes, a sand dune-prairie complex, located in the northernmost portion of the study area. The Kenosha Sand Dunes, which has been designated a natural area of statewide or greater significance by the Scientific Areas Preservation Council, is owned by the Wisconsin Electric Power Company.

9. Examination of soil types within the Chiwaukee Prairie-Carol Beach study area indicates that most of the area--1,490 acres, or 82 percent of the total area--is covered by soils which have severe or very severe limitations for residential development without public sanitary sewer service on lots less than one acre in size. Most of these soils generally have a high water table and, in some instances, low permeability rates, which prevent proper operation of conventional on-site septic systems. Moreover, about 480 acres, or 26 percent of the study area, are covered by soils which have severe or very severe limitations for residential development even with public sanitary sewer service. Much of the remainder of the study area is covered by soils having moderate limitations for sewered residential development as a result of the prevalent high water table.

10. There is no public or private centralized sanitary sewerage service within the study area. Wastewater from existing urban development--

which consists primarily of residential development, including about 515 residential structures--is disposed of through the use of on-site sewage disposal systems, including conventional septic tank systems, mound systems, and holding tanks. County sanitary permit files indicate that a total of six mound systems and 18 holding tanks have been authorized for installation within the study area. Other existing development may be assumed to be served by conventional septic tank systems. Since the enactment of Kenosha County's sanitary code and private sewerage system ordinance in July 1980, Kenosha County has identifed 11 failing septic tank systems within the study area, with all of these serving residential development. While this represents only 2 percent of all residential structures in the area, it must be recognized that Kenosha County has conducted a private sewerage system regulatory program only during the past two years and that, given the extent of existing residential development served by septic tank systems in areas which are covered by soils which are not suitable for such development, it is likely that there are many other failing septic systems in the study area.

The inventory findings presented in this chapter suggest several conclusions which should be considered in the formulation of a land use management plan for the Chiwaukee Prairie-Carol Beach study area. First, while the future population level of the study area is partially dependent on a number of external factors including general economic conditions, future population growth within the study area will also be dependent on the physical capability of the area to accommodate additional urban development. In view of the dominance of soils in the study area having severe limitations for residential development served by on-site soil absorption sewage disposal systems, it is clear that any significant increase in the population of the study area would require the extension of public sanitary sewerage services and other urban services to serve existing and new development.

Secondly, the extensive amounts of environmentally significant lands in the study area on one hand and the degree to which the study area has been committed to urban development on the other hand imply that the formulation of the land use management plan for the study area will necessarily involve

difficult public policy decisions to satisfactorily reconcile open space preservation and urban development objectives. The most difficult public policy decisions in this regard may be expected to involve those partially developed portions of the study area where residential development is sparse and scattered among the remaining prairie and wetland areas and where numerous private interests have acquired platted, but undeveloped, residential lots. While natural resource features remain at least partially intact in such areas, the preservation of these features may be difficult to achieve in view of the commitment of such areas to urban use--commitment which is reflected in the existing street pattern; in the existing, although scattered, residential development; and, perhaps most importantly, in the expectations of the many private interests which have acquired residential lots in such areas. At the same time, it must be recognized that the provision of public sanitary sewerage and other services to serve existing and any additional development in such areas may be costly and inefficient due to the sparse and scattered nature of existing housing units, as well as to the existing physical development limitations in such areas.

CHAPTER III

LEGAL LAND USE MANAGEMENT FRAMEWORK

INTRODUCTION

There are a variety of regulatory measures by which local, county, state, and federal units and agencies of government can shape and guide urban development or otherwise manage land use in the public interest. In combination, these measures can be viewed as an overall legal land use management framework. This chapter describes those aspects of this management framework which are particularly relevant to, and may have a bearing on, the management of land use within the Chiwaukee Prairie-Carol Beach study area. Specifically, this chapter describes the federal wetland regulatory programs administered by the U. S. Department of the Army, Corps of Engineers; various state wetland, shoreland, floodland, navigable waters, and sanitary sewer extension regulatory programs administered by the Wisconsin Department of Natural Resources; and local land use controls--including zoning and land subdivision controls--administered by Kenosha County and the Town of Pleasant Prairie as they apply to the study area.

FEDERAL WETLAND REGULATORY PROGRAMS

The U. S. Congress has provided for the regulation of certain wetlands of the nation. Two major programs have been created by acts of the Congress which specifically relate to the management and protection of wetlands, including wetlands in the Chiwaukee Prairie-Carol Beach study area. These two regulatory programs are provided for in Section 404 of the Federal Water Pollution Control Act of 1972, as revised by the Clean Water Act of 1977, and Section 10 of the River and Harbor Act of 1899.

Section 404, Federal Water Pollution Control Act of 1972, as Amended

Section 404 of the Federal Water Pollution Control Act of 1972, as amended, requires the U. S. Department of the Army, Corps of Engineers, to regulate, in accordance with the guidelines developed by the U. S. Environmental Protection Agency, the discharge of dredge and fill materials into waters of the United

States, which waters by definition include adjacent wetlands. The application of the federal Section 404 program in Wisconsin is different from the rest of the United States, as described below.

Section 404--The United States: Corps of Engineer regulatory jurisdiction under Section 404 extends to all waters of the United States. The Corps has specified that, for certain waters of the United States, the discharge of dredge and fill materials may be undertaken under a "nationwide permit,"[7] while in other waters, individual permits must be obtained for each proposed project, thereby providing a much greater degree of regulation. Under regulations which became effective July 22, 1982, a nationwide permit allows the discharge of dredge and fill materials into: 1) rivers and streams and their associated lakes and impoundments, including adjacent wetlands, that are located above the headwaters--with the latter being defined as the point on a stream above which the average annual flow is less than five cubic feet per second; and 2) other waters of the United States that are not part of a system tributary to designated interstate waters or navigable waters. Under the second provision above, isolated lakes are included in the nationwide permit and, as a result, projects involving the discharge of dredge and fill materials in such lakes and related wetlands do not require individual permits under Section 404.

While areas covered by the aforementioned nationwide permit are not directly regulated under the federal Section 404 program, the Section 404 regulations establish special conditions which must be followed in order for this nationwide permit to be valid. For example, Corps of Engineer regulations indicate that the discharge of dredge and fill materials must not destroy a threatened or endangered species or destroy the critical habitat of such species; that the discharge must be free of toxic pollutants in toxic amounts; and that the discharge must be properly maintained to prevent erosion and other nonpoint

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[7]Nationwide permits are intended to be issued for categories of activities which are similar in nature and which have individually and cumulatively minor environmental impacts. Nationwide permits may include permits for discharges into certain waters and permits for specific activities. Only nationwide permits for discharges into certain waters are described in this chapter.

sources of pollution. In addition, the Corps of Engineers has "discretionary authority" under which it can override the nationwide permit by requiring individual permits on a case-by-case basis.

As noted above, a higher degree of regulation is achieved with respect to those waters and adjacent wetlands in which an individual Section 404 permit is required for each project involving the discharge of dredge and fill materials. A main feature of the Corps of Engineers review process for proposed projects requiring individual permits is a "public interest review," which involves a weighing and balancing of the benefits which may be expected to accrue from the proposed project against anticipated detriments. Factors to be considered in the public interest review are, among others, conservation, economics, aesthetics, general environmental concerns, wetlands, cultural values, fish and wildlife values, flood hazards, land use, navigation, and recreation. During the permit review process, the Corps must also review proposed projects for conformance with guidelines established by the EPA to ensure the protection of environmental quality. As part of this evaluation, the Corps of Engineers considers, among other factors, the degree to which the proposed project is dependent on being located in, or in proximity to, the aquatic environment; the extent to which the proposed project would degrade the aquatic ecosystem; and the existence of less damaging practical alternatives to the project. During the review process, state agencies and federal agencies, such as the U. S. Fish and Wildlife Service and the EPA, may comment on permit applications to suggest changes that would serve to minimize adverse environmental impacts.

Section 404--Wisconsin: Under Section 401 of the Clean Water Act of 1977, permits for the construction or operation of facilities which may result in any discharge into navigable waters--including the aforementioned nationwide permit--must receive a water quality certification from the state concerned. In June 1982, the State of Wisconsin formally denied such water quality certification for certain waters included in the nationwide permit described above. The Wisconsin Department of Natural Resources has prepared a list of the types of surface waters and associated wetlands which are to be excluded from the nationwide permit. The additional waters recommended to be excluded from the nationwide permit include trout streams, trout lakes, water within primary

environmental corridors identified under Section 208 water quality management plans, water within identified scientific and natural areas, wild and scenic rivers, and certain isolated water bodies. Officially, the nationwide permit is not valid in these areas; however, specific criteria have yet to be developed for some of the foregoing areas to indicate more precisely which waters are, as a practical matter, excluded from the nationwide permit.

Section 404--Chiwaukee Prairie-Carol Beach Area

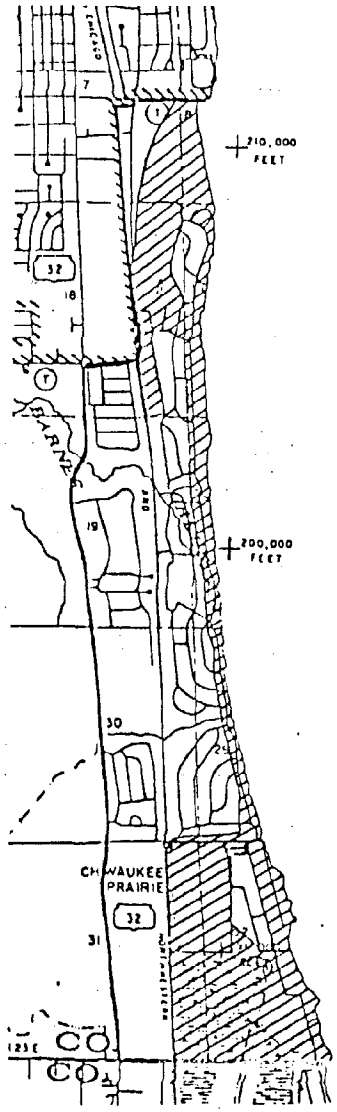
As indicated in Chapter II, a large portion of the study area consists of wetland areas (see Map 3 of Chapter II). The following paragraphs discuss the Section 404 program as it applies to the study area and attempts to identify, in general terms, which of the wetlands within the study area are now, and may in the future be, directly regulated under the federal Section 404 program.

As noted above, under nationally promulgated Corps of Engineer regulations, wetlands are subject to direct Section 404 regulation if they are adjacent to navigable waters or if they are adjacent to rivers and streams having an annual average flow of five cfs or more. Moreover, in Wisconsin, certain additional wetlands--including wetlands adjacent to surface water within primary environmental corridors--are also subject to direct Section 404 regulation. As also noted above, there are no streams in the study area having a average annual flow of five cfs. While Lake Michigan is a navigable body of water, the Corps of Engineers has determined that the wetlands in the study area are, for regulatory purposes, not considered to be adjacent to Lake Michigan. As a result, only those wetlands adjacent to surface waters in primary environmental corridors are directly regulated under Section 404 and, therefore, require individual permits for activities involving the discharge of dredge and fill material.

A primary environmental corridor has been identified in the study area under the year 2000 regional land use plan and the regional water quality management plan, which plans were adopted by the Kenosha County Board in 1978 and 1979, respectively. The areal extent of the primary environmental corridor in the study area as identified under these plans is shown in Map 13. Presently, wetlands adjacent to surface water located within the corridor are directly regulated under the Section 404 program. The primary environmental corridor

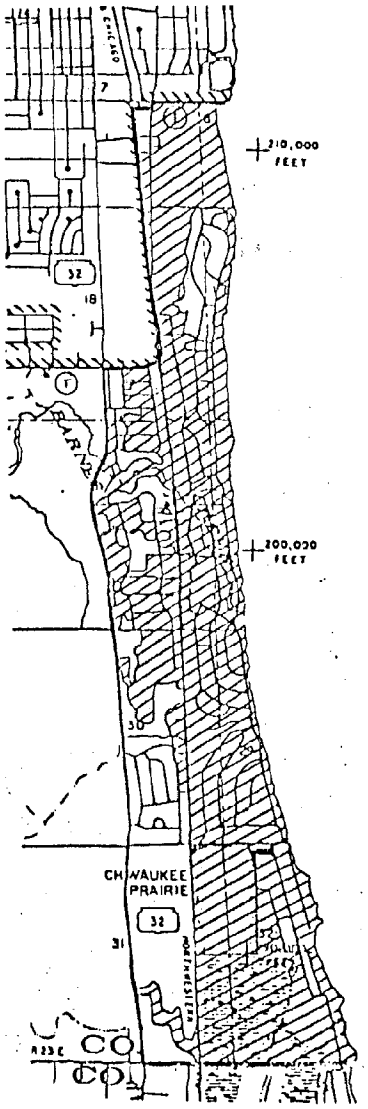
MAP 13

PRIMARY ENVIRONMENTAL CORRIDOR IN THE STUDY AREA ADOPTED UNDER THE YEAR 2000 REGIONAL LAND USE PLAN AND REGIONAL WATER QUALITY MANAGEMENT PLAN



MAP 14

PRIMARY ENVIRONMENTAL CORRIDOR IN THE STUDY AREA IDENTIFIE *THROUGH AN APPLICATION OF THE ENVIRONMENTAL CORRIDOR* INVENTORY MAPPING TECHNIQUE



adopted as part of the regional land use plan and the regional water quality management plan is considerably smaller than the environmental corridor identified through the application of the environmental corridor inventory mapping technique described in Chapter II and reproduced, for convenience, as Map 14. The environmental corridor shown on Map 14, it should be noted, is an inventory map which has not been adopted as part of any regional or local plan.

It is important to recall at this point that one of the primary purposes of this planning program is to arrive at a consensus regarding the location and size of an environmental corridor within the study area which properly reflects both existing natural resource values in the area and the significant commitment of the study area to urban use. The environmental corridor ultimately recommended will have a strong bearing on the extent of direct Section 404 regulations within the study area. All wetlands adjacent to surface waters within the environmental corridor ultimately recommended under this plan--which corridor could, but need not, be as extensive as the corridor shown on Map 14--will be directly regulated under Section 404 and, conversely, excluded from the nationwide permit for the discharge of dredge and fill materials.

Section 10, River and Harbor Act of 1899

Section 10 of the River and Harbor Act of 1899 requires the U. S. Department of the Army, Corps of Engineers, to regulate all structures or work in or affecting the navigable waters of the United States. Activities requiring permits under this regulation include, but are not limited to, construction of launching or mooring facilities, dredging, installation of shore protection such as shoreline revetment, and the discharge of dredge or fill materials. Navigable waters of the United States, as defined by the Corps of Engineers, include fresh water lakes (including Lake Michigan), rivers, streams, and their associated wetlands that are used or were used in the past, or are susceptible to use in the future, for the transport of interstate commerce.

STATE POLICIES AND REGULATORY PROGRAMS

Within the past several years, state legislative enactments profoundly changed the substance of the law relating to wetlands. Under Chapter 614, Laws of

1965, the Wisconsin Department of Natural Resources was vested with primary authority to protect and manage the wetlands of the State. Almost invariably the statutes and programs, which are commented on below, rely heavily on strong and direct participation by local units of government. Moreover, it is at that level of government where the legislation's ultimate success or failure will probably be.

NR 1.95, Wetlands Preservation, Protection, and Management

The State of Wisconsin wetlands preservation, protection, and management policies are set forth in NR 1.95 of the Wisconsin Administrative Code. Specifically, NR 1.95 establishes the rules by which the Wisconsin Department of Natural Resources administers its regulatory and management authorities regarding wetlands. Such rules require the Wisconsin Department of Natural Resources to evaluate "all reasonable alternatives, including the alternative of no action" in making regulatory decisions concerning such permitting processes as sanitary sewer extensions, dredging and filling, dams, bridges, and stream course alterations, where adverse impacts to wetlands may occur as a result of such permitted activities. In addition, land acquisition programs should emphasize wetlands; enforcement activities regarding unlawfully altered wetlands should, to the extent practicable, include restoration; and the avoidance or minimal use of wetlands should be advocated in the absence of appropriate regulatory authorities in liaison activities with federal, state, and local units and agencies of government. Administrative rules and legislation are to be promulgated by the Wisconsin Department of Natural Resources regarding the protection and enhancement of, and education relating to, wetland values and ecology.

Shoreland and Floodplain Zoning in Wisconsin

The Water Resources Act of 1966, Chapter 614, Laws of 1965, was adopted by the State Legislature in recognition of the adverse effects that water pollution had on the public health and general welfare of the citizens of the state. It set in motion a comprehensive program to protect human life and health; fish and aquatic life; scenic and ecological values; and domestic, municipal, recreational, industrial, agricultural, and other uses of water. The Act attempts to achieve these objectives by mobilizing efforts and resources at

all levels of government to enhance the quality of all the waters of the state. Towards that end, the state legislature authorized and required the zoning of shorelands and floodlands.

Shoreland Regulations: Section 59.971 of the Wisconsin Statutes requires counties of the state to enact ordinances to regulate all shoreland areas within the unincorporated areas of the counties. The regulations apply to lands within the following distances from the ordinary high-water mark of navigable waters: 1,000 feet from a lake, pond, or flowage; and 300 feet from a river or stream, or to the landward side of a floodplain, whichever distance is greater. The standards and criteria for the ordinances are set forth under Chapter NR 115 of the Wisconsin Administrative Code. They include restrictions on lot sizes, building setbacks, filling, grading, dredging, and sanitary regulations. Counties are required to keep their regulations current and effective in order to remain in compliance with the statutes and minimum standards established by the Wisconsin Department of Natural Resources. In the event that the county fails to meet the standards, the Wisconsin Department of Natural Resources will adopt and administer the required zoning ordinance.

Under NR 115, all counties in the state must place wetlands located within the statutory shoreland zoning jurisdiction area in a shoreland-wetland zoning district to ensure their preservation.[8] A wetlands mapping program currently being conducted by the Department of Natural Resources will result in the preparation of wetland maps covering the entire state and will be utilized in the identification of wetlands to be regulated under NR 115. Counties will have six months after the completion of final wetland inventory maps to amend shoreland zoning ordinances to protect the mapped wetlands. Only those wetlands in the shoreland areas will be regulated under NR 115. A description of the Wisconsin Wetlands Mapping Program is presented later in this section.

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[8]Chapter 330, Laws of 1981, enacted on April 29, 1982, requires that cities and villages also place wetlands located in the statutory shoreland zoning jurisdictional area in a shoreland-wetland zoning district. The Wisconsin Department of Natural Resources is currently preparing administrative regulations to implement this law.

Kenosha County has adopted shoreland regulations governing shorelands in the unincorporated areas of the County. The existing Kenosha County shoreland zoning regulations do not, however, include the shoreland-wetland zoning provisions required of all counties under NR 115 subsequent to the completion of final wetland inventory maps; new county shoreland zoning regulations, currently under preparation, will incorporate these provisions.

Those portions of the Chiwaukee Prairie-Carol Beach study area which are subject to the provisions of the Kenosha County shoreland zoning ordinance are shown on Map 15. This area includes the lands within 1,000 feet of the ordinary high-water mark of Lake Michigan and lands within 300 feet of the stream reaches in the study area which appear to be navigable.

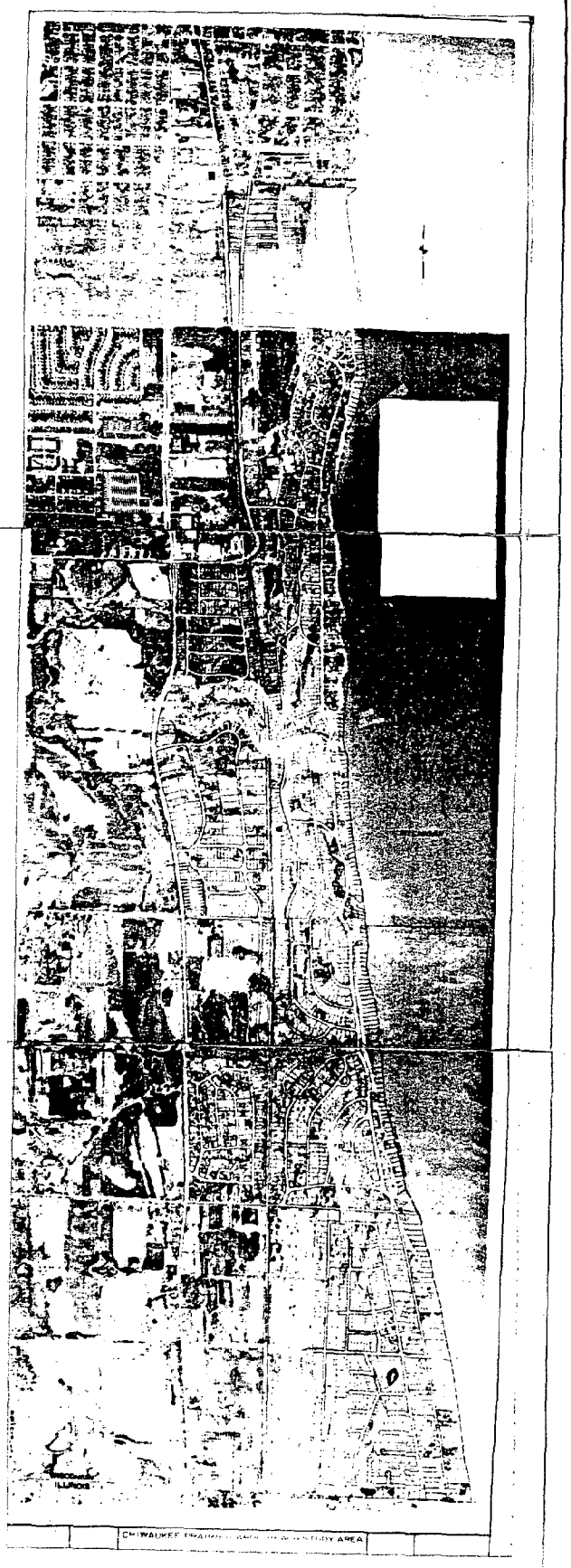
Floodland Protection: The Water Resources Act also provided for the regulation of floodlands. The delineation of floodlands and the minimum criteria that the regulations must meet are set forth in Chapter NR 116 of the Wisconsin Administrative Code. The statutes mandate that the floodland zoning ordinances be adopted by the appropriate jurisdiction--county, city, or village. If a county, city, or village fails to adopt such an ordinance, the Wisconsin Department of Natural Resources may, upon its own motion or upon the petition of a municipality, of 12 or more freeholders, or of another state agency, hold a public hearing and fix the limits and regulate the use of any floodlands, an action that will have the same effect as if adopted by the local jurisdiction. Modification of any local ordinance, once adopted, requires written approval of the Wisconsin Department of Natural Resources.

When a violation of any ordinance occurs through the construction of a structure, fill, or development in the floodplain, it is deemed to constitute a public nuisance and as such may be enjoined through an action by a municipality, the state, or any of its citizens.

It should be noted that Kenosha County has adopted floodland regulations in conformance with NR 116. These regulations apply to the floodlands identified on Map 6, presented in Chapter II of this report. Kenosha County is currently in the process of reviewing and revising its floodland regulations to ensure that the ordinance language conforms to the current Wisconsin Department of

MAP 15

SHORELAND AREAS IN THE CHIWAUKEE PRAIRIE-CAROL BEACH STUDY AREA WHICH ARE REGULATED UNDER THE KENOSHA COUNTY SHORELAND ZONING ORDINANCE



LEGEND

NAVIGABLE STREAM

SHORELANDS: LANDS WITHIN 1,000 FEET OF THE ORDINARY HIGH WATER M
OF LAKE MICHIGAN AND LANDS WITHIN 300 FEET OF NAVIGABLE STREAMS O
WITHIN THE RELATED FLOODPLAIN WHERE IT EXTENDS BEYOND THIS DISTAN

Natural Resources and Federal Emergency Management Agency requirements and to ensure the implementation of a policy of preserving natural floodplain areas in essentially open use wherever practicable so as to prevent the loss of floodwater conveyance and storage capacity.

Chapter 30, Navigable Waters, Harbors, and Navigation: Under Chapter 30 of the Wisconsin Statutes, the Wisconsin Department of Natural Resources has the authority to regulate the deposition of materials upon the bed of any navigable body of water; the straightening or altering of stream courses; dredging of material from the bed of a lake or river; the enlargement of any navigable waterway; and diversions from any body of water. Navigable waters include those wetland areas below the ordinary high-water mark of an adjacent navigable lake or stream. The stream reaches in the Chiwaukee Prairie-Carol Beach study area which appear to be navigable, and therefore subject to regulation along with Lake Michigan under Chapter 30, were noted above (see Map 15). The issuance of a Chapter 30 permit for any of the aforementioned activities in these navigable waters would be subject to the policies described above under NR 1.95 of the Wisconsin Administrative Code, as well as the Wisconsin Environmental Policy Act of 1972, which established a state policy to encourage harmony between human activity and the environment, to promote efforts to reduce damage to the environment, and to stimulate an understanding of important ecological systems.

Chapter 31, Regulation of Dams and Bridges Affecting Navigable Waters

Under Chapter 31 of the Wisconsin Statutes, the Wisconsin Department of Natural Resources has authority to regulate the location, construction, and operation of dams and bridges affecting a navigable body of water. The issuance of a Chapter 31 permit would also be subject to the policies described in NR 1.95 of the Wisconsin Administrative Code and the Wisconsin Environmental Policy Act of 1972.

Wisconsin Wetland Inventory

In response to public concern that many acres of wetlands throughout the state were being lost each year, the Wisconsin legislature, in Chapter 23.32 of the Wisconsin Statutes, directed the conduct of a statewide wetlands inventory. Responsibility for this inventory and attendant mapping program was assigned

by the Legislature to the Wisconsin Department of Natural Resources. The objective of the wetlands inventory and mapping program is to systematically identify, delineate, and classify all wetlands of 5 acres or more in size in accordance with statewide standards. For the purposes of this mapping program, the legislature defined a wetland as "an area where water is at, near, or above the land surface long enough to be capable of supporting aquatic or hydrophytic vegetation and which has soils indicative of wet conditions."[9] In accordance with this definition, wetlands ranging from cat-tail marshes, bogs, and tamarack swamps to areas covered by poorly drained soils and supporting wetland types of vegetation such as sedge meadows and shrub carrs are to be delineated in the inventory and mapping program.

The Legislature has directed the Wisconsin Department of Natural Resources to complete the wetland mapping on or before July 1, 1983. The Wisconsin Department of Natural Resources contracted with the Regional Planning Commission to conduct this program in southeastern Wisconsin. Historically, the Commission has identified and delineated wetlands in the Region as necessary for its planning programs. However, the Commission has now refined this past work in accordance with the state standards using aerial photographic interpretation.

The wetland areas for Kenosha County have been delineated on 1" = 2,000' scale ratioed and rectified aerial photographs. The mapped areas have been checked for consistency against U. S. Soil Conservation Service soil survey maps, the best available topographic maps, and the Commission's own historic wetland delineations. Field checks were conducted to verify the wetland boundaries. These wetland delineations are consistent with, and have been incorporated into, the various inventory maps which have been prepared for use in this planning program for the Chiwaukee Prairie-Carol Beach study area.

It should be noted that the wetland maps which have been prepared for Kenosha County are preliminary maps. Under the procedures established by the Department of Natural Resources to implement the provisions of NR 115, such preliminary maps will be provided to the counties for review. Chapter NR 115

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[9]Chapter 23.32 (1), Wisconsin Statutes, 1980.

requires that the county zoning committee hold at least one public hearing to receive comments on accuracy and completeness of the preliminary wetland maps. Subsequently, the county zoning committee will meet with the Department of Natural Resources to discuss any changes to the maps recommended by the county. Finally, the Wisconsin wetlands inventory staff will prepare final wetland maps for the county. As previously noted, the county will then have six months to amend its shoreland zoning ordinance to protect the mapped wetlands. County review of the preliminary wetland maps for Kenosha County is expected to begin before the end of 1982.

Review of Sanitary Sewerage System Plans

Under Chapter 144 of the Wisconsin Statutes, the Department of Natural Resources is required to review and take action to approve, approve conditionally, or reject plans for proposed sewage treatment plants and sewerage systems, including all extensions of sanitary sewers. Chapter NR 110 of the Wisconsin Administrative Code sets forth the procedures to be followed and criteria to be used by the Department of Natural Resources in the review of such proposals. Under NR 110.04, any sewerage system plans must be in conformance with an approved areawide waste treatment management plan, if such a plan exists. As previously indicated in Chapter I, such a plan has been prepared and adopted by the Regional Planning Commission for the Southeastern Wisconsin Region and endorsed by the Wisconsin Department of Natural Resources. The recommendations of this plan are, however, necessarily general and do not reflect detailed local planning considerations. The sanitary sewer service area recommendations of the land use management plan for the Chiwaukee Prairie-Carol Beach study area as set forth in the next chapter of this report are intended to constitute an amendment to the sewer service area recommendations contained in the regional plan and will be used by the Department of Natural Resources, as well as by the Regional Planning Commission, in the review of specific sewerage system proposals in the study area.

COUNTY AND LOCAL LAND USE REGULATION

Two important types of land use regulation adopted and administered by Kenosha County--namely floodland regulations and shoreland regulations--were described in the previous section of this chapter on state policies and regulations.

This section presents a description of other county and local land use controls which have a direct bearing on the management of land use in the Chiwaukee Prairie-Carol Beach study area, including general zoning, subdivision control ordinances, and the county sanitary code and private sewerage system ordinances.

General Zoning Ordinance

Zoning ordinances represent one of the most important means available to county and local units of government for managing land use in the public interest. In Wisconsin, counties may enact a general, or comprehensive, zoning ordinance covering all unincorporated areas of the county. Such a county zoning ordinance, however, becomes effective only in those towns which act to ratify the county ordinance.

A general zoning ordinance was approved and adopted by Kenosha County in 1959 and has since been ratified by six of the eight towns in the county, including the Town of Pleasant Prairie. The County is presently in the process of preparing a new zoning ordinance and zoning district map. The zoning ordinance adopted by the County in 1959 will be in effect until Kenosha County and the towns in the County take formal action to adopt the new ordinance.

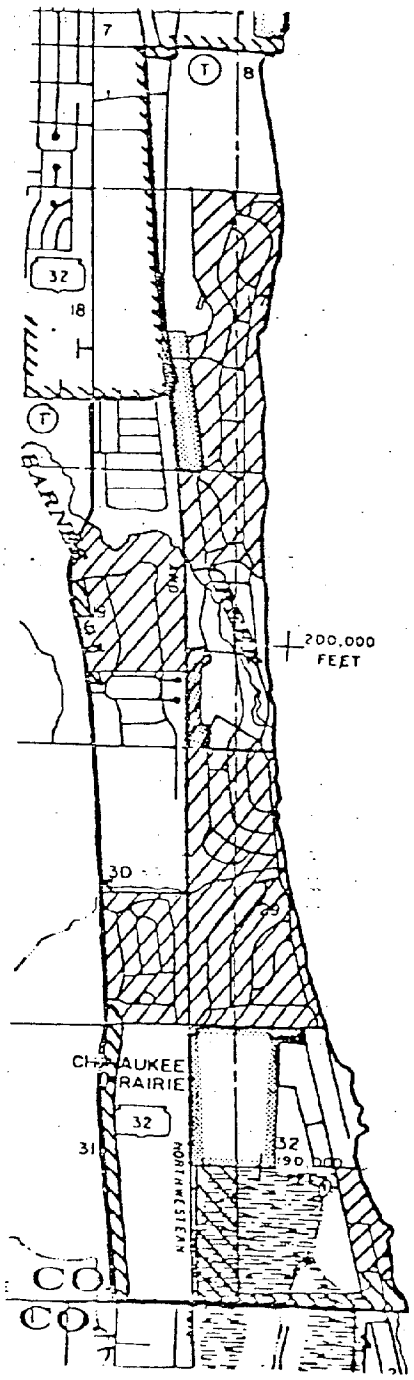
A total of eight zoning districts are provided in the existing Kenosha County ordinance. Three of the eight districts--Residential district "A," the Commercial district, and the Agricultural district--are presently applied within the Chiwaukee Prairie-Carol Beach study area (see Map 16). Each of these districts permits intensive urban development in the form of medium-density residential and other urban development. Each of the three districts permits single-family residences on sewered lots of 8,400 square feet or more, and unsewered lots of 12,600 square feet or more. Under the county subdivision control ordinance, however, newly created unsewered lots may not be less than 20,000 square feet or 40,000 square feet in size, depending on the type of soils covering the site, as specified in the ordinance.

Subdivision Control Ordinances

Kenosha County approved and adopted a subdivision control ordinance in 1971. This subdivision control ordinance governs the division of land in all unincorporated areas of the county. The Town of Pleasant Prairie has also

MAP 16

EXISTING ZONING DISTRICTS IN THE CHIWAUKEE
PRAIRIE-CAROL BEACH STUDY AREA: 1982



Legend

Residential
Commercial
Agricultural

adopted a subdivision control ordinance governing the division of land within the Town. Both ordinances set forth procedures to be followed by the owner/developer in the submission of preliminary and final plats. The ordinances regulate the form of proposed urban development through detailed design standards regarding streets, the layout of lots and blocks, and other development features. The division of land within the Town of Pleasant Prairie must be in accord with both the town and the county ordinances. Where differences between the ordinances exist, the more stringent regulations shall be met.

County Sanitary Code and Private Sewage System Ordinance

A county sanitary code and private sewage system regulatory ordinance became effective in Kenosha County in July 1980. This ordinance regulates the location, construction, installation, alteration, design, use, and maintenance of private waste disposal and private water systems in the county. Regulations in the ordinance pertaining to private sewage systems apply throughout the County, including cities and villages as well as unincorporated areas. Sections 59.065 and 145.01(15) of the Wisconsin Statutes require that all Wisconsin counties, except counties with a population of 500,000 or more, adopt and administer an ordinance regulating private sewage systems within the county.

The county sanitary code establishes site requirements for soil absorption sewage disposal systems including percolation rates and minimum allowable depth to groundwater and bedrock. Under the ordinance, holding tanks are generally permitted to remedy failing conventional septic tank system or failing mound systems. Holding tanks are also permitted to serve new construction on lots of record created on or before July 1, 1980. As noted in Chapter II of this report, there are more than 2,100 vacant lots in the study area within in subdivisions recorded prior to this date.

CHAPTER IV

LAND USE MANAGEMENT PLAN

INTRODUCTION

This chapter describes the recommended land use management plant for the Chiwaukee Prairie-Carol Beach area of the Town of Pleasant Prairie. This plan is intended to guide the concerned agencies and units of government in the provision of basic urban services and facilities--including, most importantly, public sanitary sewer service; to guide local, county, state, and federal units and agencies of government in the exercise of their respective land use regulatory responsibilities, particularly regulations for the protection of environmentally significant open space lands; to guide public agencies and private interests in the acquisition of additional environmentally significant open space land; and to provide a framework within which private interests can formulate plans for additional development within the study area.

From the outset of this planning program it has been recognized that valid, but conflicting open space preservation and urban development needs exist relative to the study area. The planning program has attempted to resolve these conflicts by bringing together the concerned public and private interests, through an advisory committee structure, to review existing conditions in the study area and to take an active part in the preparation of a land use management plan. The technical and citizen advisory committee assisted in articulating the open space preservation and urban development needs of the study area, in formulating the general design guidelines to be used in the formulation of the plan for the area, and in the review and adjustment of the plan.

The next three sections of this chapter describe the various existing open space preservation and urban development needs of the Chiwaukee Prairie-Carol Beach area; present a recommended land use plan which addresses these needs; and indicates steps which should be taken by public agencies and private interests to achieve implementation of the plan.

DEFINITION OF NEEDS

As indicated in Chapter II of this report, the Chiwaukee Prairie-Carol Beach study area is a unique area which contains a diversity of land uses, including certain sensitive wetland and prairie areas which are essentially undisturbed by man's activities; wetland and prairie areas which have been partially developed in residential use where existing homes are scattered intermittently along an extensive street network; relatively highly developed areas that represent true residential neighborhoods; and remnant agricultural lands. Much of the study area has been platted for urban residential use, but actual development has been constrained, owing in large measure to wet soils and other physical development limitations. There has been a growing concern for the preservation of wetlands and prairies in the study area, many of which are platted for urban use. As a result, the future of the Chiwaukee Prairie-Carol Beach area has, for a number of years, been uncertain. This uncertainty has increased somewhat owing to the evolving status of certain state and federal regulatory programs which affect land use in the study area.

This planning program is intended to eliminate the uncertainty which has surrounded the study area through the formulation of a land use management plan which properly addresses the various needs that exist relative to the area. Before a land use plan is prepared, it is important that these needs be properly identified. The needs identified below were defined with the assistance of the technical coordinating and advisory committee and may be broadly classified as open space preservation needs, urban land use development needs, and public utility and facility needs. The key element of the plan development process is the weighing and balancing of these needs to formulate a sound land use management plan which can be embraced by property owners, environmentalists, and public regulatory agencies alike.

Open Space Preservation Needs

Several important natural resource base protection and open space preservation needs have been identified for the Chiwaukee Prairie-Carol Beach study area. First, the two outstanding natural resource areas within the study area--the Kenosha Sand Dunes and the Chiwaukee Prairie--should be preserved intact. The Chiwaukee Prairie--a designated state scientific area and one of the best

remaining examples of shore low prairie in the Great Lakes Region--is located in the southern portion of the study area south of 116th Street and is currently under acquisition by The Nature Conservancy. The Kenosha Sand Dunes--a sand dunes-prairie complex which has been designated a natural area of statewide significance--is located in the northern portion of the study area north of 85th Street and is held by the Wisconsin Electric Power Company.

Second, an open space corridor linking the Kenosha Sand Dunes and the Chiwaukee Prairie should be preserved. Such a corridor would help maintain the biologic integrity of the study area, providing a means for the movement of seeds and wildlife through the study area.

Third, other areas which encompass high value wetlands, prairies, and wildlife habitat should be preserved. In particular, areas encompassing federal- and state-threatened plant species should be preserved.

Urban Land Use Development Needs

By approving land subdivision plats which created more than 2,700 residential lots along an extensive street pattern, the Town of Pleasant Prairie and Kenosha County effectively committed a large portion of the study area to urban development. This commitment increased as those lots were sold to private interests fully expecting to develop them for residential use. The expectations and financial commitment of more than 1,600 private interests which own property in the study area are important considerations in the formulation of the land use planned for the study area. The extensive platting activity which has taken place in the study area and the subsequent sale of lots for residential development dictate that portions of the study area be allowed to continue to be developed in urban use, despite the generally high water table and other physical development limitations described in Chapter II of this report.

Additional urban land use in the study area should consist primarily of residential lands. Other urban land uses should be allowed only insofar as they are necessary to support existing and additional residential development. The only major exception in this regard is the southeastern corner of the study area which has been committed to marina use and which may require further commercial development to maintain the viability of the existing marina facility.

Public Utility and Facility Needs

Sanitary Sewer Facility Needs: No public or private centralized sanitary sewer service is now provided within the study area. Those portions of the study area where significant additional residential development occurs should be provided with public sanitary sewer service, since most of the study area is covered by soils poorly suited for residential development using on-site soil absorption sewage disposal systems (see Map 10 in Chapter II). Moreover, existing residential units should, to the maximum extent practicable, be provided with public sanitary sewer service to correct existing on-site sewage disposal problems. As indicated in Chapter II, 11 failing septic systems have been identified in the study area during the two-year period in which Kenosha County has conducted a private sanitary sewerage system regulatory program. Given the extent of existing residential development served by septic tank systems in areas covered by soils which are not suitable for such development, it is likely that there are many other failing septic systems in the study area.

The regional water quality management plan recommends that sewage from the study area and from other areas of the southeastern portion of the Town of Pleasant Prairie be conveyed to the Kenosha wastewater treatment plant for treatment and disposal via a sanitary sewer trunk line proposed to be constructed along Sheridan Road. The high cost of the trunk line coupled with insufficient development to support the trunk line in the southeastern portion of the Town make the proposal economically unfeasible at the present time. While the trunk line is recognized as the ultimate solution to sewage treatment problems in the southeastern portion of the Town, an interim approach to providing sewage treatment within the study area may be required. The approach receiving most serious consideration is the construction of a small sewage treatment plant in the vicinity of Carol Beach Estates Unit No. 1, to provide sewage treatment for existing and additional development in the southern portion of the study area. Such a plant would remain in service until sufficient development occurs in the southeastern portion of the Town to support extension of the trunk line from the City of Kenosha.

Transportation Needs: As indicated in Chapter II, the study area contains a total of 4.7 linear miles of arterial streets--consisting of State Highway 32

and County Highway T--and 20.8 linear miles of existing local streets. Numerous local street segments in the area are unpaved and in poor condition, and need to be repaired if only to continue to provide access to existing residential development. In addition, local street segments in those sparsely developed areas which are to be intensively developed for urban use in the future need to be widened and paved or repaved.

As also indicated in Chapter II, shoreline recession has resulted in actual and potential damages to property along the Lake Michigan shoreline in the study area. Of particular concern to the Town of Pleasant Prairie is the potential destruction of segments of Lakeshore Drive which parallels the Lake Michigan shoreline on the eastern side of the study area. A portion of Lakeshore Drive in the vicinity of 122nd Street has already been destroyed as a result of shoreline erosion. Other segments appear to be in danger of being destroyed unless structural shore protection measures are undertaken. The following are among the most critically threatened segments of Lakeshore Drive: an approximately 0.2 linear mile segment near 116th Street; an approximately 0.4 linear mile segment between 113th Street and 106th Street; and an approximately 0.1 linear mile segment near 102nd Street. Certain of the platted subdivisions east of the Chicago & North Western railway right-of-way in the study area--specifically Carol Beach Estates Units 3, 4, and 4a--are completely dependent on Lakeshore Drive for access. If Lakeshore Drive is not maintained, alternate access routes would have to be provided.

Other Community Facility Needs: Any significant increase in the study area population would require an increase in other community facilities and services, including educational and recreational facilities and services. There are presently no public or private schools in the study area. Public elementary students from within the study area are bussed to schools outside the area. A significant increase in the school population may be expected to increase busing requirements and possibly to require the construction of a new elementary school at, or in the vicinity of, the study area.

Urban areas typically generate demands for outdoor recreational facilities such as softball diamonds, tennis courts, basketball courts, and playground apparatus. There are two developed outdoor recreation sites in the study area

other than the Trident Marina. The town-owned park located along 111th Street in Carol Beach Estates Unit 1, provides a playfield, playground equipment, and a picnic shelter. The Town Club, a private recreation site located north of 90th Street provides tennis courts, a swimming pool, and a picnic area. A significant increase in the population of the study area may be expected to result in an attendant increase in the demand for such recreational facilities.

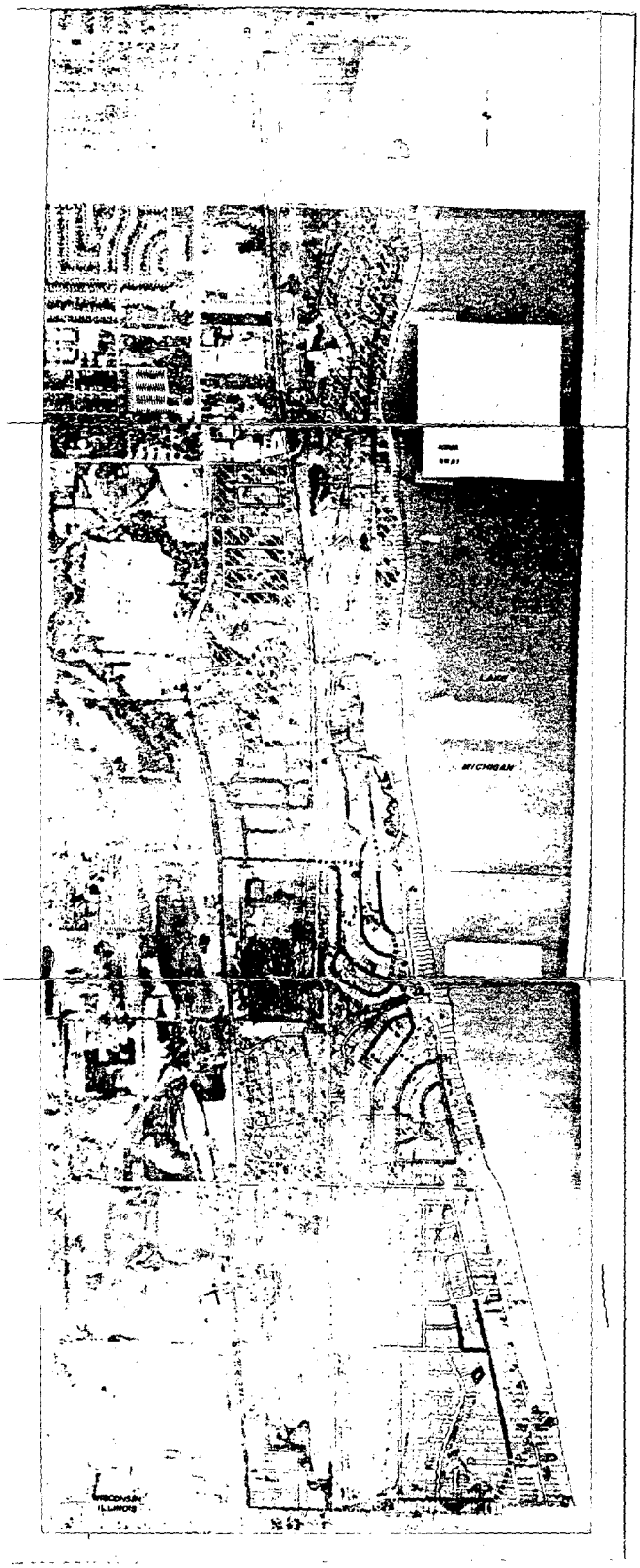
Definition of Needs: Concluding Remarks

The foregoing analysis suggests a basic conflict which must be addressed in the formulation of a land use management plan for the Chiwaukee Prairie-Carol Beach area--namely, the conflict between open space preservation and urban development needs. Large tracts of environmentally significant areas have been platted for intensive residential development. The development of such areas would result in the destruction of their educational, recreational, scientific, and ecologically values. Conversely, the preservation of such areas stands in opposition to their formal commitment to urban use.

This conflict has arisen because the area was committed to development prior to any systematic evaluation of its natural resource characteristics and, importantly, prior to the establishment of certain major state and federal regulatory programs which are intended to protect the natural resource base. All that can be attempted at this point is to formulate and implement a compromise plan for the area which attempts to satisfy, insofar as possible, both open space preservation and urban development needs. Such a plan, prepared under the guidance of the technical coordinating and advisory committee, is presented in the following section.

RECOMMENDED LAND USE MANAGEMENT PLAN

The recommended land use management plan for the Chiwaukee Prairire-Carol Beach study area is shown on Map 17. This recommended plan divides the study area into four types of areas: a primary environmental corridor; single-family residential areas; redevelopment areas; and other areas.



MAP 17

RECOMMENDED LAND USE MANAGEMENT PLAN FOR THE CHIWAUKEE PRAIRIE-CAROL BEACH STUDY AREA

LEGEND

- PRIMARILY SINGLE-FAMILY RESIDENTIAL AREA
- REDEVELOPMENT AREA
- PRIMARY ENVIRONMENTAL CORRIDOR
- OTHER OPEN LAND
- PROPOSED STREET--OVER EXISTING RIGHT-OF-WAY (OTHER EXISTING RIGHTS-OF-WAY TO BE VACATED)
- PROPOSED STREET--RIGHT-OF-WAY TO BE ACQUIRED

Primary Environmental Corridor Lands

The primary environmental corridor as shown on Map 17 includes the two outstanding natural features of the study area--the Kenosha Sand Dunes and the Chiwaukee Prairie, located at the northern and southern ends of the study area, respectively--and an elongated tract of open space lands which links these two features. This connecting link itself consists largely of important prairies, wetlands, and wildlife habitat areas and may be expected to assume additional importance as a means for the movement of plant seeds and wildlife through the study area as other adjacent lands are developed in urban use. The preservation in basically natural, open use of the primary environmental corridor shown on Map 17 is considered to be essential to the preservation and protection of the natural resource values of the study area. In addition, this recommended corridor would lend form and structure to, and enhance the beauty of, the adjacent residential development areas envisioned under the plan.

It should be noted that there is a total of 17 existing residential structures in the recommended primary environmental corridor. These structures do not disrupt the integrity of the corridor; their continued existence is not in conflict with the maintenance of resource values in the corridor. The plan, nevertheless, recommends that consideration be given to relocating 11 of these structures. Four of these 11 structures are located close to the Lake Michigan shoreline along reaches which are particularly subject to shoreline erosion. The other seven units are so scattered and isolated that the continued maintenance of the existing roads serving these units may prove uneconomical to the town and the town may, therefore, decide to assist the present owners in efforts to relocate their structures.

Single-Family Residential Areas

The environmental corridor described above effectively divides the study area into a number of subareas where significant additional single-family residential development is anticipated. These areas consist of platted residential lots and have been developed, in varying degrees, in urban residential use. These areas typically encompass lower value, but nevertheless environmentally significant wetlands and prairies, which, as a practical matter, cannot be preserved in open space use in view of their previous commitment to urban

development. Most of the platted lots fall within the medium residential density range, which is defined by the Regional Planning Commission as 6,230 square feet to 18,890 square feet per residential unit.

Under the proposed land use management plan, the urban areas shown on Map 17 would be fully developed in predominantly single-family residential use. Other urban development would be limited to that necessary to support existing and additional residential development--for example, intensive outdoor recreational facility development. Centralized public sanitary sewer service would be provided throughout the urban areas, and streets would be widened and paved or repaved as necessary.

Redevelopment Areas

The recommended land use management plan identifies three redevelopment areas within the study area. The plan recommends that, within the two redevelopment areas which are located along the Lake Michigan shoreline north of 116th Street, consideration be given to intensive apartment or condominium development. Future development along these rapidly eroding shoreline reaches requires the installation of effective shore protection. While typically unaffordable by individual property owners, effective shore protection may be economically feasible as part of a high-density residential development complex. Existing houses within the proposed redevelopment areas--some of which are presently threatened by shore erosion--may be able to be relocated if and when apartment/condominium development proceeds. Any decision to relocate existing houses would rest with the private interests concerned.

The third redevelopment area identified in the land use management plan is located in the southeastern corner of the study area and includes the Trident Marina and adjacent land. The recommended plan includes no specific recommendations for the Trident Marina; however, the plan holds open the option of further development of the marina in the future. Development alternatives include expansion of the boat mooring area and the construction of additional commercial support facilities, including among others, restaurant and lodging facilities. Major additional development of the marina may be expected to require improved access to the marina from Sheridan Road. Access to the

marina from Sheridan Road is presently provided via a circuituous route over local roads north of the marina. The construction of a new road in the southern-most portion of the study area parallel to the Wisconsin-Illinois state line appears to be the best means for providing improved access to the marina from Sheridan Road. Major additional development of the marina may also be expected to require the provision of public sanitary sewer service to the marina. Public sanitary sewer service would be provided to existing residences in the area only in the event that sewer service is extended to the marina.

Future expansion of the Trident Marina may require the relocation of certain residential structures presently located in the potential marina expansion area. Again, any decisions to relocate existing structures would be made by the private interests concerned.

Other Lands

The recommended plan anticipates no significant change in land use in the portion of the study area located west of the Chicago & North Western railway right-of-way and south of 116th Street. This area presently consists primarily of agricultural land, but also includes isolated wetland-prairie areas and minor commercial and residential development along the east side of Sheridan Road.

PLAN IMPLEMENTATION

The recommended land use management plan described above provides a guide to urban land use development and open space preservation in the Chiwaukee Prairie-Carol Beach area of the Town of Pleasant Prairie. In a practical sense, the recommended land use management plan is not complete, however, until the steps required to implement the plan are specified. This section describes those regulatory and nonregulatory actions which should be undertaken by public and quasi-public agencies to achieve implementation of the recommended plan. A description of the various local, county, state, and federal regulatory policies and programs which may have a bearing on land use within the study area was previously presented in Chapter III of this report.

Public Hearing

Although town plan commissions are not required under Wisconsin Statutes to hold public hearings on proposed plans prior to adoption, it is nevertheless recommended that, in order to provide for and promote active citizen participation in the planning process, the Town of Pleasant Prairie Plan Commission should hold a formal public hearing to acquaint residents and land owners with all the details of the proposed plan and to solicit public reaction to the plan proposals. Such public review is particularly important inasmuch as the proposed plan will constitute an amendment to the sanitary sewer service area recommendations of the regional water quality management plan and will be used by the Wisconsin Department of Natural Resources in its review of sanitary sewer service extension proposals in the study area.

Plan Adoption and Endorsement

Following adjustment of the plan as appropriate subsequent to the public hearing, the Town of Pleasant Prairie Plan Commission should adopt the plan and certify it to the Town Board, which should also formally adopt the plan. The Regional Planning Commission should then adopt the plan as an amendment to the regional land use plan and the regional water quality management plan. The Wisconsin Department of Natural Resources should endorse the plan as an amendment to the regional water quality management plan and utilize the plan in the exercise of its various regulatory resonsibilities. The U. S. Army Corps of Engineers should likewise endorse the plan and utilize the plan in the exercise of its various regulatory responsibilities, including, importantly, the federal Section 404 regulatory program.

Zoning

Of all the land use plan implementation devices presently available, perhaps the most important and most versatile is the the general zoning ordinance. As indicated in Chapter II, the Town of Pleasant Prairie has adopted the Kenosha County Zoning Ordinance. The Kenosha County Planning and Zoning Committee administers this ordinance jointly with the Town. Kenosha County is in the process of revising the County Zoning Ordinance.

In the preparation of a new zoning district map for the Town of Pleasant Prairie, the Kenosha County Planning and Zoning Committee should incorporate the following recommendations to ensure implementation of the land use management plan for the Chiwaukee Prairie-Carol Beach area of the Town:

1. Lands within the recommended primary environmental corridor should be placed within the C-1 Lowland Resource Conservancy district provided in the revised county zoning ordinance.

2. Lands within the recommended single-family residential development areas should be placed in one of the four urban single-family residential districts provided in the revised county zoning ordinance.

3. Existing outdoor recreation sites, including the Trident Marina, the Town Club, and Town Park located along 111th Street north of Carol Beach Estates Unit 1 should be placed in the PR-1 Park-Recreational district.

Open Space Acquisition

The application of conservancy zoning to lands within the primary environmental corridor as recommended above would protect such lands from encroachment by urban development. However, because of the previous commitment of these areas to urban use, the environmental corridor preservation effort should also include an acquisition program under which remaining privately held, undeveloped land in the environmental corridors would be acquired by public and/or quasi-public interests, thereby providing fair compensation to the present owners. A substantial portion of the proposed environmental corridor is already held by The Nature Conservancy, the University of Wisconsin, and the Town of Pleasant Prairie (see Map 4 in Chapter II). The plan recommends that a cooperative effort be mounted by the Town of Pleasant Prairie, Kenosha County, The Nature Conservancy, and other conservancy organizations to acquire other privately held, platted lands in the proposed environmental corridor, as these lots become available for purchase.

Public Improvements

Sanitary Sewer Service: It is recommended that the Town of Pleasant Prairie install a sanitary sewer collection system to serve all existing and additional urban development in the identified urban service areas within the Chiwaukee Prairie-Carol Beach area. The total construction cost of a sanitary sewer collection system serving the proposed urban service areas is estimated at $5.0 million. This cost, it should be noted, does not include the cost of

constructing the sewer trunk line from the City of Kenosha wastewater treatment plant, which is recommended under the regional water quality managment plan.

Local Street System: The recommended land use management plan envisions the reconstruction or resurfacing of most existing local streets within the study area and the construction of additional road segments over new rights-of-way in certain portions of the study area. The plan also envisions the construction of additional local streets across the Chicago & North Western railway right-of-way--along 104th Street extended and along the proposed road parallelling the Wisconsin-Illinois state line--in order to provide access to existing and additional development east of the railroad tracks. The estimated road improvement costs in the study area total $2.8 million dollars.

Certain portions of the platted local street system would be vacated under the plan. Most important in this regard is the recommended vacation of certain segments of Lakeshore Drive which are threatened by Lake Michigan shoreline erosion (see Map 17). The plan proposes that the main north-south collector street be relocated to the west, out of the shore erosion hazard area.

State Regulatory Functions

After endorsing the land use management plan for the Chiwaukee Prairie-Carol Beach area, the Wisconsin Department of Natural Resources should use the plan as appropriate in the administration of its various regulatory programs outlined in Chapter III. Of particular importance is the Department's regulation of sanitary sewer extensions and treatment facilities. In this regard, the Department should consider the land use management plan to be a formal amendment to the sewer service area recommendations of the regional water quality management plan and use the plan in its review of proposed sewer extensions in the Chiwaukee Prairie-Carol Beach area.

Federal Regulatory Functions

After endorsing the land use management plan for the Chiwaukee Prairie-Carol Beach area, the U. S. Army Corps of Engineers should use the plan as appropriate in the administration of its various regulatory programs, particularly

the Section 404 program, described in Chapter III. Under Section 404 regulations as they apply within the State of Wisconsin, individual Section 404 permits are required for all activities involving the discharge of dredge and fill materials into water and adjacent wetlands in the recommended primary environmental corridor. In reviewing applications for Section 404 permits in the primary environmental corridor, the Corps of Engineers should recognize the importance of maintaining this corridor in essentially natural, open use and approve only those projects which must, of necessity, be located in the corridor and which will not impair existing natural resource values.